Asia-Pacific
Economic Cooperation

Asia-Pacific
Legal Metrology Forum

Report of Training Course on Verification of Non-Automatic Weighing Instruments

APEC/APLMF Training Courses in Legal Metrology (CTI-18/2004T)

November 8-12, 2004
Shanghai, People's Republic of China

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February 2006

Train the Trainer Course on the Verification of Non-Automatic Weighing Instruments
November 8-12, 2004

Photos taken at the training course in Shanghai

Contents

Foreword

This booklet is one of outcomes of the APEC Training Courses in Legal Metrology titled 'Train the Trainer Course on the Verification of Non-Automatic Weighing Instruments' that was held on November 8-12, 2004 at the Qingzhilv Hotel in Shanghai, Peoples Republic of China. This training course was organized by the Asia-Pacific Legal Metrology Forum (APLMF) with a support fund of APEC-TILF (Trade and Investment Liberalization and Facilitation) program, CTI-18/2004T. The training course was also supported by (1) General Administration of Quality Supervision, Inspection and Quarantine of the People's Republic of China (AQSIQ), (2) National Measurement Institute, Australia, and (3) National Metrology Institute of Japan (NMIJ). Having this result, I would like to extend my sincere gratitude to all the staffs of the AQSIQ and four trainers from Australia, PR China and Japan. Also, special thanks should be extended to the APEC Secretariat for their voluntary supports.

We have kept making surveys among the APEC member economies concerning seminar and training programs in legal metrology to find their needs and also possible resources which would be available for the region. The survey shows that there is still a strong need for repeating training courses on weighing instruments that is one of the most traditional and essential category of instruments in legal metrology which is closely connected to daily life of every people. In addition, according to the globalization of international trade in worldwide, the compliance to international recommendations related to non-automatic weighing instruments (NAWI) which is represented by the OIML Recommendation R76 is getting an important issue for the APEC and APLMF member economies.

Main target of this training course was to assist the experts in charge of verification of NAWI in the APEC / APLMF member economies to learn deeply and to develop common understanding about the verification procedures based on the international standards and OIML recommendations. Thus the target would meet the APEC objective to harmonize metrology legislation within the OIML framework. The actual contents of the training course were focused on the understandings of basic principle and construction of non-automatic weighing instruments, international recommendations related to the weighing instruments, and learning of actual verification procedures through practices using real instruments.

In view of these situations, this training course concerning non-automatic weighing instruments had been planned and finished successfully so as to settle a sure basis of confidence in legal metrology related to the measurement of mass within the Asia-Pacific region. I would like to say certainly that this is a valuable step to fruitful activities in legal

metrology related to weighing instruments in the Asia-Pacific region.

I am really pleased to have this outcome from the training course and again deeply appreciate invaluable voluntary efforts of the APEC Secretariat.

February 9, 2006

Dr. Akira Ooiwa
APLMF President

APEC/APLMF Training Courses in Legal Metrology
Train-the-Trainer Course on Verification and In-service Inspection of Weighing Instruments

The Train-the-Trainer Course on Verification and In-service Inspection of Weighing Instruments was held from 8 to 12 November 2004 at the Quingzhilv Hotel, Shanghai. It was jointly presented by APLMF, the Department of Metrology, General Administration of Quality Supervision, Inspection and Quarantine (AQSIQ), Peoples Republic of China, National Metrology Institute of Japan (NIMJ) and the National Measurement Institute, Australia (NMIA).

26 trainees attended the course from the following 15 different economies namely Cambodia, Chinese Taipei, Hong Kong China, Indonesia, Japan, Malaysia, Mexico, Mongolia, Papua New Guinea, Peoples Republic of China, Peru, Philippines, Singapore, Thailand and Vietnam. Two trainers from Australia, an assistant trainer from PR China and a guest trainer from Japan were provided the training. The executive secretary of APLMF and seven staffs from the host economy also supported the course. Most of the participations outside from PR China were supported by APEC or NMIJ. The host economy provided the venue and meals.

Weighing instruments determine the value of a large range of commodities and play an important economic and commercial role in every day transactions. Accurate and reliable measuring instruments are vital to the confidence of these measurements. As part of the process of ensuring weighing instruments are reliable and accurate modern economies implement a national measurement system which includes pattern approval of weighing instruments and periodic verification of these instruments while they operate in the marketplace. OIML member economies implement the recommendations contained in OIML R 76. This agreed set of internationally accepted test procedures is used for both pattern approval and verification of weighing instruments.

OIML R 76, issued in 1992, was used by the NMIA to develop this Train-the-Trainer package. All Trade Measurement inspectors in Australia have been training, and it is recommended that all licensed certifiers also attend training. More than 300 licensed certifiers have attended one-day training courses, and several have attended the more extensive three-day Train–the-Trainer course. The objectives of the Train-the-Trainer course delivered in Shanghai were to provide:

- highly competent individuals from member economies with a training package they could use in their own economies to implement OIML R 76;
- opportunities for in-depth discussion to clarify understanding of the test procedures for weighing instruments; and
- a sound basis for harmonisation of verification of weighing instruments within the region.

By providing regionally consistent training aligned with international best practice and standards, APLMF is assisting with the harmonisation of legal metrology within the region. Thus it provides greater confidence between economies and supports for the development of bilateral and mutual recognition agreements.

This training package has been delivered several times within the Asia Pacific region. It continues to be well attended and provides an excellent forum for discussion and exchange of ideas. The format of the package has developed over time and is now available as a CD ROM with imbedded video clips. Each participant received their own copy of all the material used in the training. This will allow them to train others when they return to their own workplace. Read only versions are also available on the APLMF website. The package contains:

- NMI V 1 Uniform Test Procedures for the Verification, Certification and In-service Inspection of Weighing Instruments.
- Trainers Manual – providing step-by-step instructions for the trainer
- Learners Manual – notes on the course including exercises to reinforce learning
- Assessment Manual – some questions to assess how much has been understood.

The course started off with each economy delivering a short outline of how the verification of weighing instruments is managed within their economy. On the last segment of the course was represented by participants working in groups. This provided an excellent opportunity to clarify understanding and to ensure the procedures are understood by all.

APLMF would like to acknowledge the hard work and dedication of the following individuals who worked cooperatively to ensure the training achieved a successful outcome. Mr. Adrian Caster, Manager Pattern Approval, NMIA, presented the training. Mr. Caster has more than forty years experience working in the weighing industry and has worked closely with Trade Measurement in Australia. His experience makes him a highly competent trainer. Mrs. Marian Haire, Manager Training and Technical Transfer, NIMA, coordinated the development of the package and presented the training aspects of the course. Mr. Cai Changqing, Senior Engineer, National Measurement Institute, PR China who supported Mr. Caster during the training and translated when required for the Chinese participants. Ms. Zhao Yan, Deputy Director of Division of Metrological Management for the Department of Metrology, AQSIQ who managed all the practical arrangements to ensure the course would run smoothly. Ms. Zhao Yan and Mr. Cai Changqing also ensured that we were all very comfortable and got to see the sights of Shanghai during the evening.
Dr. Tsuyoshi Matsumoto, executive secretary of APLMF who provided support and administration of the training course.

The participants all worked hard and applied themselves to the task of ensuring that they got the most from the course. They showed dedication and interest throughout the five days. They participated in the challenge when they were asked to demonstrate that they understood the materials. They provided further opportunities for their colleagues to discuss aspects of the procedures that required further clarification.

Mr. Adrian Caster commented that: *"Trainers always find it challenging to meet the needs of the participants particularly when those participants are highly skilled national authority personnel whose economies interpret procedures in a variety of ways. The skills of the participants attending this training were obvious as they willingly participated in lively discussions about the interpretations being applied to the various requirements of the test procedures. I received a great feeling of satisfaction when participants indicated a clear understanding of particular aspect of the course that had previously caused them some concerns. It was particularly pleasing to see the innovative way the course was presented back to the trainers on the last day as this demonstrated that the training had achieved its objectives and that there was a high level of confidence that the participants would be able to*

return to their own economies and confidently pass their knowledge and training on to the members of their staff".

Mr. Takeshi Ito and Dr. Satoshi Matsuoka from the Legal Metrology Division, NIMJ presented lectures on Overview of Measurement Law and Metrology Policy in Japan and Embedded Software in Weighing Instruments. For their lectures, a lot of question and comments were given from the participants.

Mr. Xuan Xiang, Director General, Department of Metrology, AQSIQ officially welcomed the participants to China and wished them all a successful week. During the closing ceremony, the certificates were presented to all the participants. All participants returned evaluation forms which provided valuable information for the organisers. They commented on the practical nature of the course, the clarity of the presentation, the effectiveness of the CD ROM presentations and the experience and knowledge of the presenters. When asked what they would change, suggestions were made which would extend the scope of the course. Some wished they could have more time for practice and others wanted to include more information on pattern approval. The participants found it most valuable to have an opportunity to discuss in depth the issues related to the implementation of OIML R76 and to have practical ways to implement it in their own economies. All participants went away determined to train others and to discuss how they would implement the procedures in their economies. There were requests to hold the training course again and to hold similar training courses for high capacity weighing instruments.

Indonesia has agreed to run this course again in September 2005.

Mrs. Marian Haire
Manager
Training and Technical Transfer
National Measurement Institute, Australia

APEC/APLMF Training Courses in Legal Metrology (CTI-18/2004T)

Train the Trainer Course on the Verification of Non-Automatic Weighing Instruments

8 - 12 November, 2004

Qingzhilv Hotel in Shanghai, People's Republic of China

Venue:
Qingzhilv Hotel
219 Wending Road, Shanghai, Peoples Republic of China
Tel: +86-21-6469-0808
http://www.qzlhotel.com/
http://www.chinatravelkey.com/shanghai/threestar/qingzhilvhotel.htm

Target audience:
We suggest that the ideal participants include:

- Inspectors or certifiers (industry representatives) who verify non-automatic weighing instruments
- Staffs with a responsibility from ensuring inspectors are trained in the verification process.
- Senior Trade Measurement officials

Presenters:

- Mr. Adrian Caster: Manager Pattern Approval Laboratory, National Measurement Institute, Australia
- Mrs. Marian Haire: Manager Training Services, National Measurement Institute, Australia
- Mr. Cai Changqing, Senior Engineer, National Measurement Institute, Peoples Republic of China
- Mr. Takeshi Ito, Legal Metrology Division, National Metrology Institute of Japan/AIST, Japan

COURSE PROGRAM

Monday 8th November, 2004 Starting at 14:00

14:00 - 14:30	*Opening ceremony* - Welcome Address by the Host - Opening Address by Dr Matsumoto, Executive Secretary APLMF
14:30 - 15:30	- Introduction - Issues related to training - Participants provide brief overview of their measurement system and the role of the trade measurement inspector in their economy.
15:30 - 16:00:	*Coffee Break*
16:00 - 17:00	- Measurement System in Australia - Difference between verification and in-service inspection
18:30 -20:30	- *Welcome Dinner invited by the Host*

Tuesday 9th November, 2004 - 9:00 - 17:00

9:00 - 10:30 - Metrological Control of non-automatic weighing instruments
- Construction of non-automatic weighing instruments

10:30 - 11:00: *Coffee Break*

11:00 - 12:00 - Calculating maximum permissible errors

12:00 - 14:00: *Lunch*

14:00 - 15:00 - Visual inspection
- Repeatability
- Eccentricity

15:00 - 15:30: *Coffee break*

15:30 - 17:00 - Accuracy of zero
- Discrimination

20:00 - 21:30 - *Entertainment program*

Wednesday 10th November, 2004 - 9:00 - 17:00

9:00 - 10:00 - Weighing Test
- Weighing Test using Substitution Material

10:00 - 10:30: *Coffee break*

10:30 - 12:00 - Calculating the actual weight of the substitution load
- Tare Test

12:00 - 14:00: *Lunch*

14:00 - 15:00 - Supplementary Test
- Conducting a full verification or in-service inspection from beginning to end.

15:00 - 15:30: *Coffee break*

15:30 - 17:00 - Training technique

Thursday 11th November, 2004 - 8:30 - 17:00

Site visit:
Pattern Approval Laboratory at Shanghai Institute of Measurement and Testing Technology

Friday 12th November, 2004 - 9:00 - 17:30

9:00 - 10:00 - Assessment of participants

10:00 - 10:30 *Coffee break*

10:30 - 12:30 - Assessment of participants

12:30 - 14:00 *Lunch*

14:00 - 15:30 - Feedback Task presented by participants

15:30 - 16:00 *Coffee break*

16:00 - 17:10 - Discussion about current situation on NAWI in Japan presented by Mr. Takeshi Ito and Mr. Satoshi Matsuoka.

17:10 - 17:30 -*Concluding ceremony and presentation of certificates*

Saturday 13th November, 2004

- Delegates depart

Participants List: Train the Trainer Course on the Verification of Non-Automatic Weighing Instruments

November 8-12, 2004 in Shanghai, People's Republic of China

No.	Economy	Category	Name	Organization
1	**Australia**	Trainer	Mr. Adrian Caster	Manager Pattern Approval Laboratory, National Measurement Institute, Australia
2	**Australia**	Trainer	Ms. Marian Haire	Manager Training Services, National Measurement Institute, Australia
3	**Cambodia**	Trainee	Mr. Narith Sok	Department of Metrology (DoM), Ministry of Industry, Mines and Energy (MIME), Cambodia
4	**Cambodia**	Trainee	Mr. Setha Chau	Department of Metrology (DoM), Ministry of Industry, Mines and Energy (MIME), Cambodia
5	**China, PR**	Host	Mr. Jianping Han	Department of International Coopeation, Administration of Quality Supervision, Inspection and Quarantine of the People's Republic of China
6	**China, PR**	Host	Mr. Li Shao	Vice Director, Shanghai Institute of Measurement and Testing Technology
7	**China, PR**	Host	Mr. Liang Guo	Department of International Coopeation, Administration of Quality Supervision, Inspection and Quarantine of the People's Republic of China
8	**China, PR**	Host	Ms. Ni Wei	Director/Senior Engineer, National Measurement Institute, Peoples Republic of China
9	**China, PR**	Host	Mr. Xiang Xuan	Deneral Director, Administration of Quality Supervision, Inspection and Quarantine of the People's Republic of China (AQSIQ)
10	**China, PR**	Host	Ms. Yan Zhao	Duputy Director, Department of Metrology, Administration of Quality Supervision, Inspection and Quarantine of the People's Republic of China
11	**China, PR**	Host	Mr. Yu Gong	National Measurement Institute, Peoples Republic of China
12	**China, PR**	Trainee	Mr. Da Sun	Liaoning Provincial Institute of Measurement
13	**China, PR**	Trainee	Mr. Jian Zhang	Jiangsu Institute of Measurement and Testing
14	**China, PR**	Trainee	Mr. Kaiyu He	Henan Provincial Institute of Measurement
15	**China, PR**	Trainee	Mr. Pin Lu	Zhejiang Institute of weight instruments
16	**China, PR**	Trainee	Ms. Shufang Zhang	Hebei Provincial Institute of Measurement
17	**China, PR**	Trainee	Ms. Xiaowei He	Shanghai institute of Measurement and testing Technology
18	**China, PR**	Trainee	Ms. Xiaoyong Ma	Beijing Institute of Measurement and testing

19	**China, PR**	Trainee	Mr. Xuesong Chen	National Institute of Measurement and Testing Technology
20	**China, PR**	Trainee	Mr. Yanfei Chen	Wuhan Institute of Measurement and testing
21	**China, PR**	Trainee	Mr. Zhigang Wang	Chengyaang Institute of Energy standard measurement
22	**China, PR**	Trainer	Ms. Changqing Cai	Senior Engineer, National Measurement Institute, Peoples Republic of China
23	**Hong Kong, China**	Trainee	Mr. Chi-kin Tsang	Government Laboratory, Special Administrative Region, The Government of the Hong Kong
24	**Indonesia**	Trainee	Mr. Anak Agung Made Darmawan	The Directorate of Metrology
25	**Japan**	APLMF	Dr. Tsuyoshi Matsumoto	Executive Secretary of APLMF / National Metrology Institute of Japan /AIST
26	**Japan**	Trainee	Dr. Satoshi Matsuoka	National Metrology Institute of Japan /AIST
27	**Japan**	Trainer	Mr. Takeshi Ito	National Metrology Institute of Japan /AIST
28	**Malaysia**	Trainee	Mr. Iskandar Halim Sulaiman	Ministry of Domestic Trade and Consumer Affairs,, Malaysia
29	**Malaysia**	Trainee	Mrs. Sapiah Mohd Nor	Ministry of Domestic Trade and Consumer Affairs, Malaysia
30	**Mexico**	Trainee	Mr. Eduardo González	National Center of Metrology, (CENAM)
31	**Mongolia**	Trainee	Ms. Khishigdelger Gemgui	Mongolian Agency for Standardization and Metrology (MASM)
32	**Papua New Guinea**	Trainee	Ms. Debbie Anne Taitarae	PNG National Institute of Standards and Industrial Technology (NISIT)
33	**Peru**	Trainee	Mr. Aldo Martin Quiroga Rojas	National Institute for the Defense of Competition and Intellectual Property (INDECOPI)
34	**Philippines**	Trainee	Mr. Rodrigo Bacalla Dacuyan	National Metrology Laboratory, Industrial Technology Development Institute
35	**Singapore**	Trainee	Mr. Ang Pau Yuen Adrian	SPRING Singapore, (Weights and Measures Office)
36	**Taipei, Chinese**	Trainee	Mr. Yuan-Ping Sun	Bureau of Standards, Metrology, and Inspection
37	**Thailand**	Trainee	Mr. Peerayuth Chamrak	Eastern Verification Center(Chonburi), Department Of Internal Trade
38	**Viet Nam**	Trainee	Mr. Ly Van Bui	QUATEST 2

*Names are listed in alphabetical order of their economies, categories and first names.

Note:

The lecture of National Measurement Institute of Australia is available online. Go to http://www.nmi.gov.au and click on "Publications." The document on which the lecture was based is titled "Uniform test procedures."

Overview of Measurement Law and Metrology Policy in Japan

TAKESHI ITO

November 12, 2004

Metrology Management Center
Metrology Planning Office
National Metrology Institute of Japan (NMIJ)

CONTENS

Introduction on Measurement Law

- Legal Metrology system in Japan is administrated by the Measurement Law, related Cabinet order and Ministerial ordinance.
- The purpose of the Law is to develop the economy by establishing the standards of measurement and realizing accurate measurement. (Article 1)
- The Law was established in 1951 and fully amended in 1992(the current Measurement Law) in order to correspond to new social needs, such as internationalization and deregulation.

Introduction on Measurement Law

- Main Concept
  - Any person who measures the quantity in transaction or certification with legal units shall measure it accurately. (Article 10)
  - Prohibition against use of non-legal measuring units for transaction or certification.
  - Measuring instruments for legal control
  - Initial verification, re-verification, periodic inspection

Legal Measuring Instruments subject to verification(18 types) -1-

- Taximeters *
- Weights, Non-automatic weighting instruments *
- Thermometers *(glass thermometer)
- Clinical thermometers (glass type, resistance type) *
- leather-area measuring Instruments *
- water meters, hot-water meters, fuel-dispenser, gas meters, LPG-dispenser, etc.) *
- Pressure gauges *(Aneroid manometers, Aneroid sphygmomanometers)
- Flow meters * (exhaust-gas, drainage)
- Heatmeters *

Legal Measuring Instruments subject to verification(18 types) -2-

- Maximum-demand power meters #
- Watt-hour meters #
- Reactive watt-hour meters #
- Illuminometers #
- Sound level meters *
- Vibration level meters *
- Density meters * (instruments for measuring concentration)
- Float-type hydrometers * (Relative density hydrometers)

Note: Type approvals for the instruments marked with * are granted by NMIJ/AIST and with # by JEMIC (Japan Electric Meters Inspection Corporation).

Non-automatic weighting instruments

- Scope
  - Verification scale interval $e \geq 10mg$
  - Number of verification scale interval $n \geq 100$
- Certificate

	2002	2003	2004
Japanese TAC	14	14	9
OIML Certificate	0	1	2
Total	14	15	11

Nov 9 2004

Verification organizations for implementation

National Measurement Institute of Japan (NMIJ/AIST)	: 60 staff
Local Governments (47)	: almost measuring instruments : 15000 staff
Japan Electric Meters Inspection Corporation (JEMIC)	: mainly electric meters : 600 staff
Designated verification bodies (2)	: mainly environmental meters : 400 staff

Verification and Inspection system

Initial Verification (Local Governments)

Re-verification
Local Governments (47)

- Taxi meters (1 year)
- Water meter (8 years)
- Hot water meters(8years)
- Fuel-dispenser (7 years)
- Heatmeters (8 years)
- Illuminometers (2 years)
- Sound level meters (5 years)

, etc.

Periodic inspection
Local Governments (47)
& Special Cities (102)

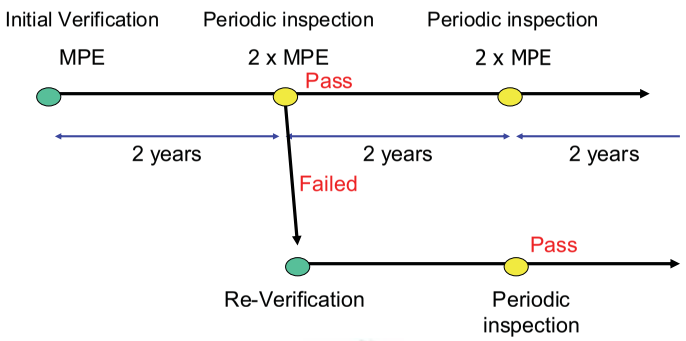
- Weighting instrument (every other year)
- Leather-area measuring machines (every year)

Initial only

- Hydrometers
- Glass clinical thermometer
- Aneroid sphygmomanometers

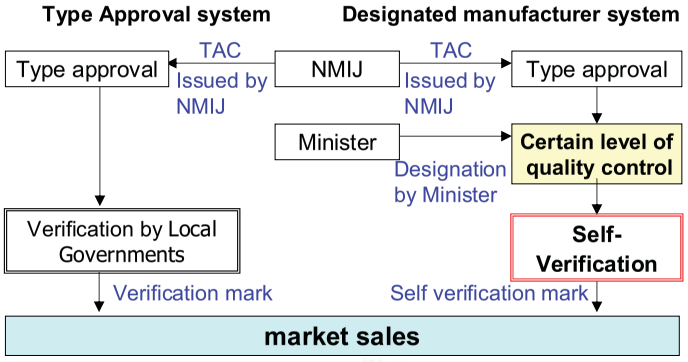
National Metrology Institute of Japan

Non-automatic weighting instruments



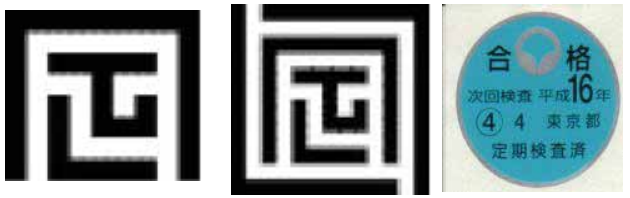
National Metrology Institute of Japan

Type approval system and Designated manufacturer system



National Metrology Institute of Japan

Verification and inspection marks



Verification mark | Self-Verification mark | Periodic inspection mark

National Metrology Institute of Japan


Thank you very much for
your kind attention.
E-mail: Ito-takeshi@aist.go.jp
National Metrology Institute of Japan

About Embedded Software in Weighing Instruments

Satoshi Matsuoka
Legal Metrology Division
National Metrology Institute of Japan
AIST

The plan of the talk

1. Background
2. What we have done so far
3. Demonstration of software we have developed

Plan of the talk

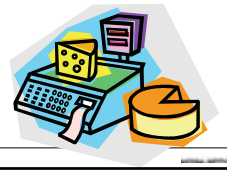
1. Background
2. What we have done so far
3. Demonstration of software we have developed

Weighing Instruments

- The old age

Mechanically Controlled

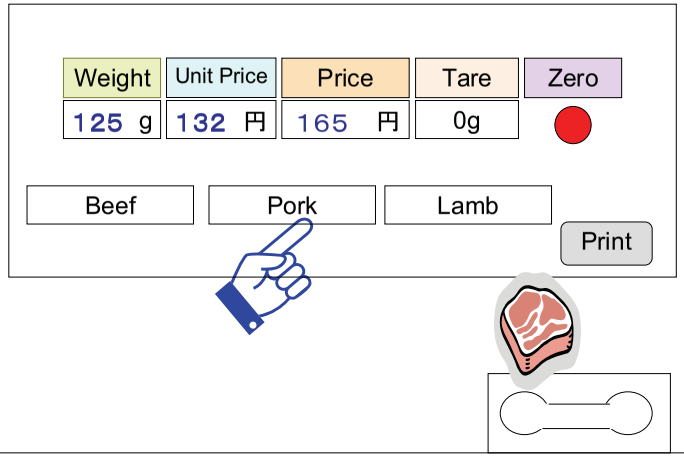
- The modern age



Controlled by Computer

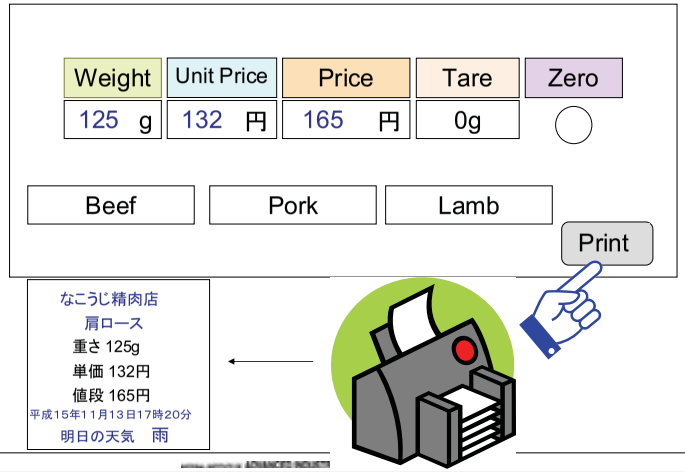
AIST

Operational point of view of Weighing Instruments



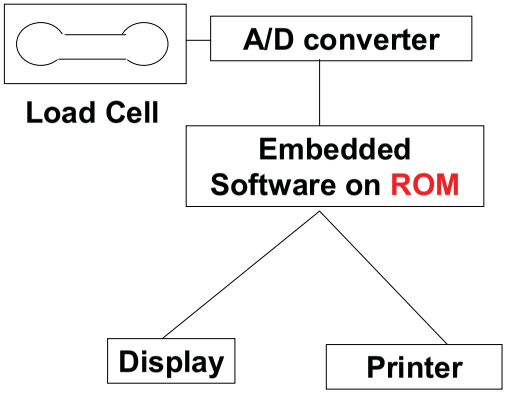
AIST

Operational point of view of Weighing Instruments



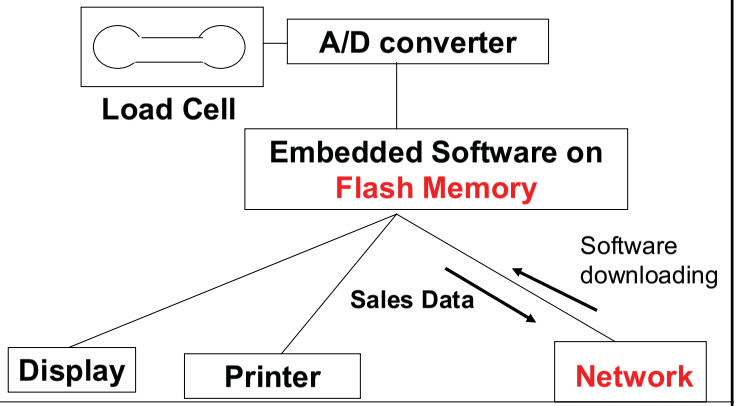
AIST

Computer Controlled Weighing Instruments (Up to Now)



AIST

Computer Controlled Weighing Instruments (In the future)



- Currently most weighing instruments are computer-controlled.
- Up to now the software of a weighing instrument cannot be changed without breaking a physical seal.
- But the software of many of the latest weighing instruments can be changed through network.

Legal Metrology Division of NMIJ

- My current affiliation
- Responsible for controlling measuring instruments legally
- Tests and approves measuring instruments
- Up to now only doing hardware tests
- Attempts to introduce software examinations

Problem

- Flash memory and network connection: allowing to change the software of a weighing instrument after the weighing instrument left the factory
- Contradicting Legal Metrology activities

History of Software Examination of Measuring Instruments

- 1995: **WELMEC 2.3** "Guide for Examining Software (Weighing Instruments)
- 1999: **WELMEC 7.1** "Software Requirements on the Basis of the Measuring Instruments Directive"
- 2003: **MID-software** Draft "Software Requirements and Validation Guide"
- 2003: working draft of new **OIML R76-1**, including software requirements
- March 2004: **Measuring Instruments Directive (MID),** including software requirements
- October 2004: **OIML TC5/SC2 "Software"** Draft "General Requirements for Software Controlled Measuring Instruments"

Activity In Japan

- June 2003～March 2004 : Cooperative Research Project on Software Examination in Weighing Instruments

  Participants:

  1. National Metrological Institute of Japan
  2. Center for System Verification
  3. A weighing instruments company

The plan of the talk

1. Background
2. What we have done so far
3. Demonstration of software we have developed

What we have done so far

1. A proposal of “software sealing”
2. An implementation of the proposed “software sealing” method
3. Discussions with a measuring instrument company

Software Separation (WELMEC 2.3)

- Separation into Legal Relevant Functions and non-Legal Relevant Functions
- The integrity of the Legal Relevant functions must be sure

The most important thing about software examination

After type approval, legal relevant functions of weighing instruments must not be changed without permission of the Notified Body.

Weighing Instruments in Europe

- Self integrity checking : Instruments themselves check the integrity of software
- But, the Notified Body must completely trust measuring instruments companies.

Going Further (Software Sealing)

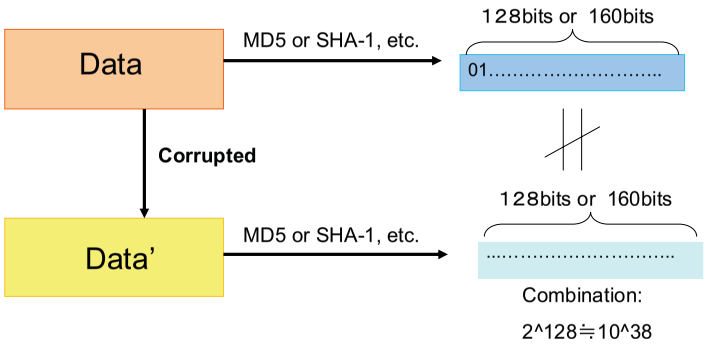
a. Manufacturers must register the digest of NAWI software to NMIJ

b. But it is only Legal Relevant functions

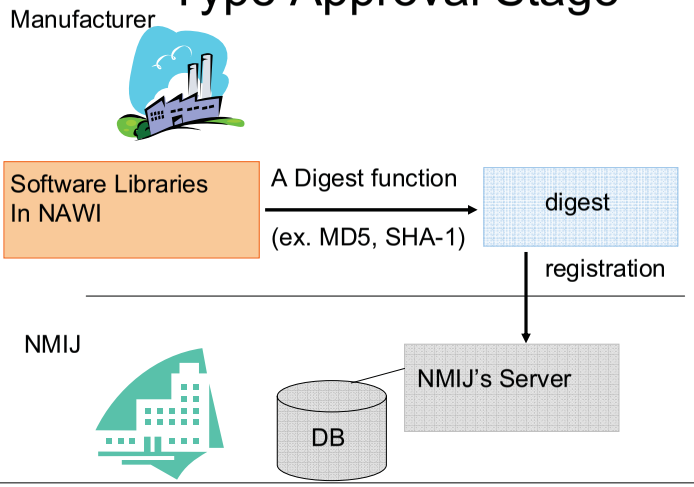
c. Manufacturers can freely update Non-Legal Relevant functions

d. Local Notified Bodies should periodically check the integrity of Legal Relevant functions of NAWI put into service

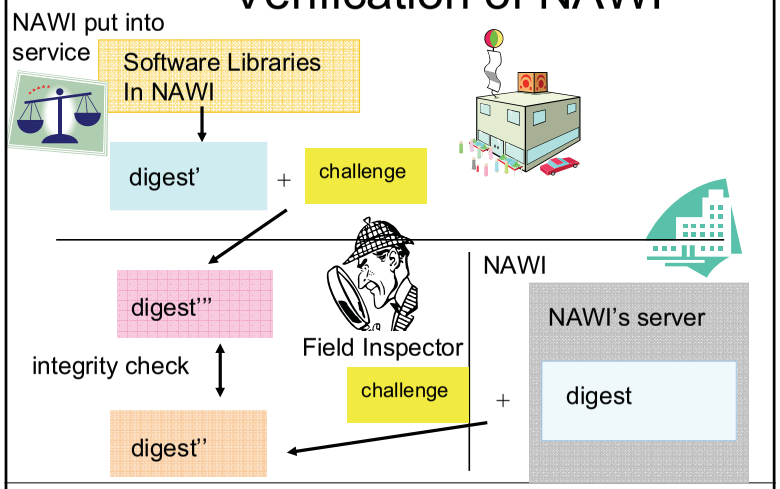
What is a digest function?



Type Approval Stage

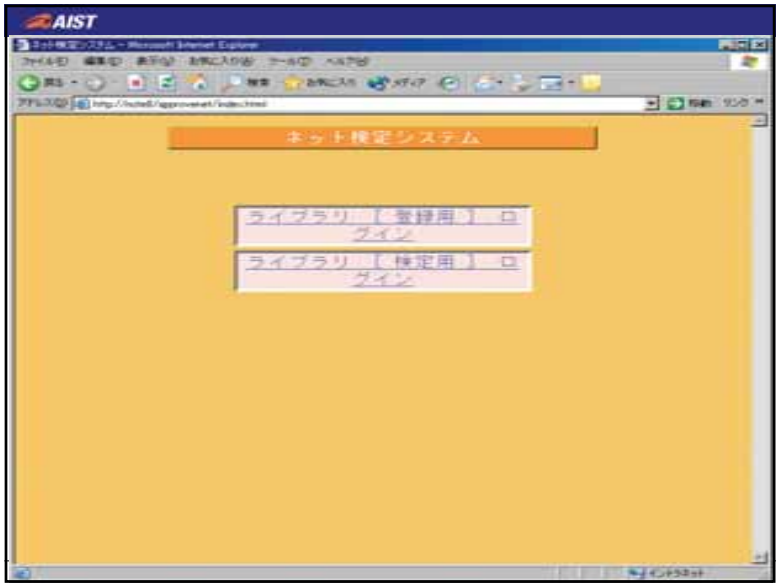


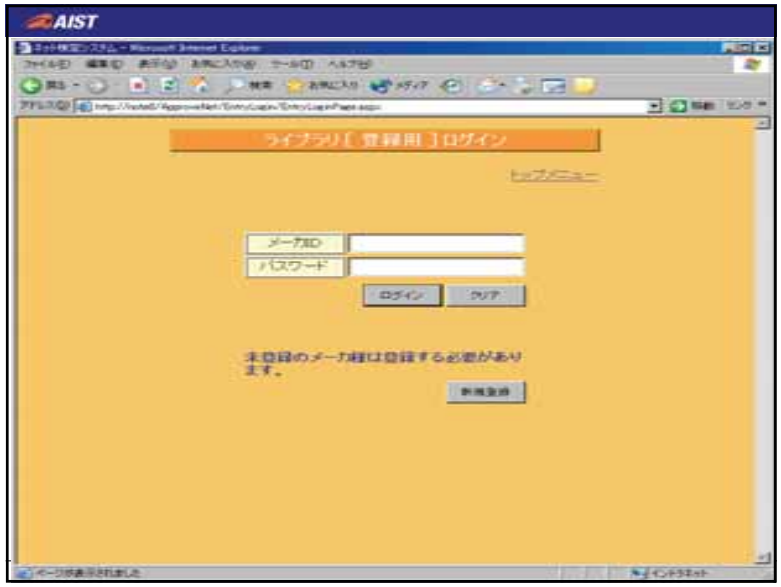
Verification of NAWI



Two Systems we have developed

1. Web application which interacts with NMIJ's server
2. Verification Window, which is embedded into weighing instruments




AIST
ライブラリ［登録用］ログイン
トップメニュー
メーカID
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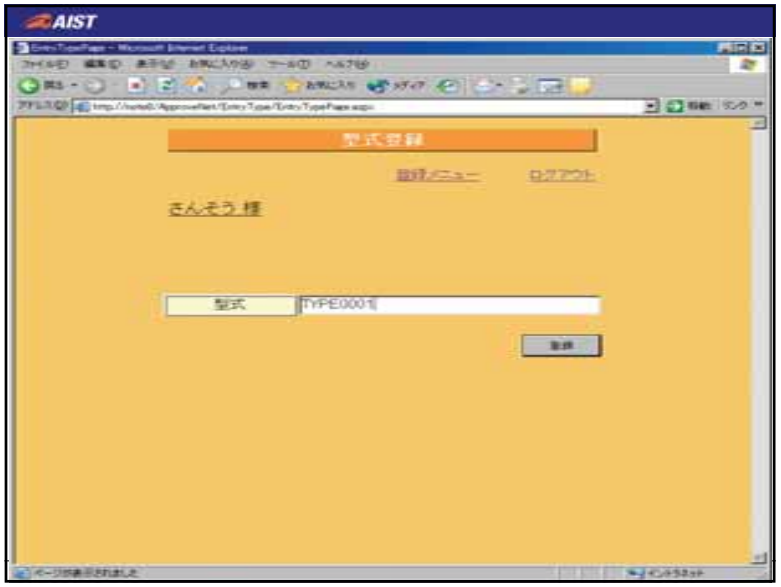
新規登録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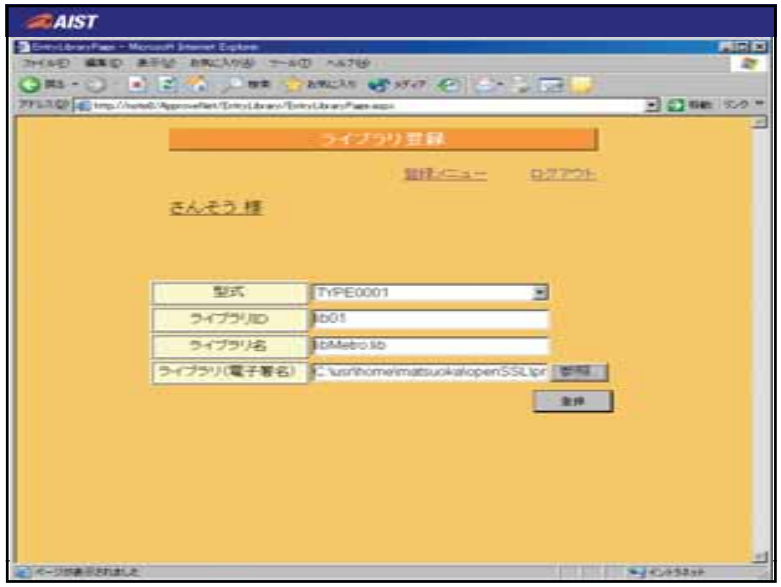
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libMetro.lib
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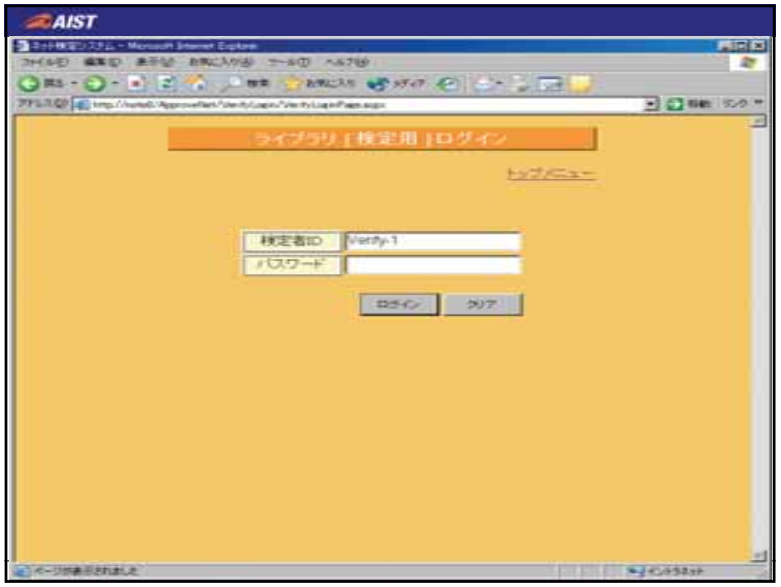
参照
登録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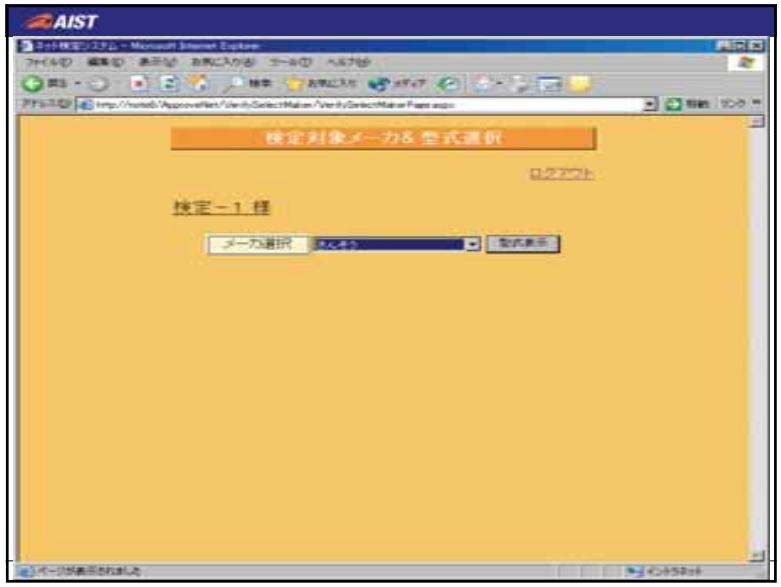
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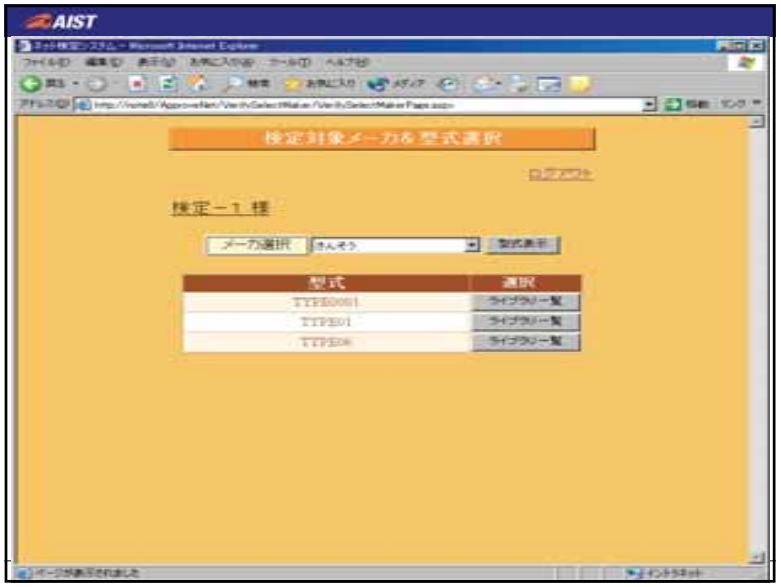
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ライブラリ一覧


AIST
ライブラリ検定
メーカ選択
ログアウト
検定－１ 様
メーカ名:
さんそう 様
型 式 名:
TYPE0001
ライブラリID
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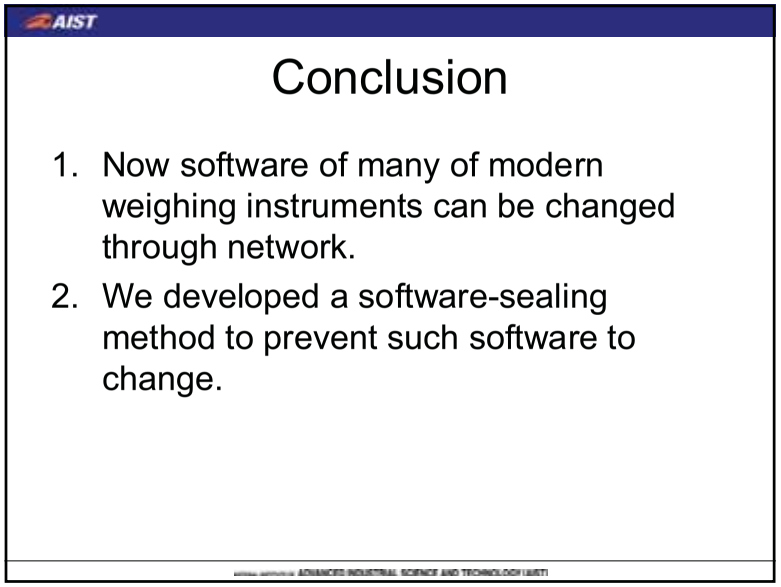
検定対象ライブラリ
検 定 結 果
参照
検定
NG


AIST
Conclusion
1. Now software of many of modern weighing instruments can be changed through network.
2. We developed a software-sealing method to prevent such software to change.
ADVANCED INDUSTRIAL SCIENCE AND TECHNOLOGY (AIST)

COUNTRY REPORT OF METROLOGY IN CAMBODIA

Presented
by
Mr. SOK Narith

Department of Metrology
Ministry of Industry Mines and Energy
Kingdom of Cambodia
E-mail : dom_mime@camintel.com

APEC/APLMF Training Course
On
Non-Automatic Weighing Instrumments
From 08 – 12, November 2004
In the P.R. of China

1- Background

• Land area:	181.035 Sq. Km
• Capital city:	Phnom Penh
• Number of Provinces:	24
• Population:	12.4 million (year 2002)
• Official language:	Khmer
• Currency:	Riel
• Religion:	Buddhism
• Average annual temp.:	28.5 ºC
• Season:	6 Months dry season, Nov. to April; 6 Months rainy season, May to Oct.

Measurement System and the Role of the Trade Measurement Inspection in Cambodia

2- History

-1964	Establishment of the National service of Weights and Measures, under the Ministry of Industry.
-1975-79	No activities.
-1995	Re-Establishment of Weights and Measures Unit, under the Ministry of Industry, Mines and Energy (MIME).
-1999	The Weights and Measures Unit upgraded to the Department of Metrology.
-2000	Corresponding member of the International Organization of Legal Metrology (OIML).
-2002	Member of Asia Pacific Legal Metrology Forum (APLMF).

3- Law and Regulation

The legal metrology in Cambodia was operation on

-Circular No. 3 DT/PMC. It is an Administration on the metrological supervision for weighing and measuring instruments used in business transaction.

- Sub-Degree No. 35 AK/PK. It defines the Organization and Functioning of The MIME and the Role of Dept. of Metrology.

- Law on “Management of Quality and Safety of Products and Services “.

- Drafted Law on “Metrology of Cambodia”.

4- Legal Units of Measurement

-In Cambodia, the International System of Units (SI) to be the Principal System of Measurement.

5- Range of Equipment Subject to the Legal Metrology

- All weighing and measuring instruments intended for Commercial uses must have certificate of approval.
- Department of Metrology is in charge of this subject.

6- Type Approval

- There is no Type Approval function in Cambodia.
- This subject has been studied and will be established in the near future.

7- Accreditation and Certification System

- There is no accreditation system for legal metrology in Cambodia.
- This subject has been studied and will be established in the near future.

8- Verification and Inspection

- Any company dealing with the business of manufacturing, importing, selling or repairing of the weighing and measuring instruments shall have a license issued by the Department of Metrology.
- All weighing and measuring instruments provided for trade uses or any others applications under the Ministerial Regulations must be verified by comparison with the standards of weights and measures.
- The accuracy of weighing and measuring instruments (an initial, periodical and unexpected verifications), shall not be exceeded the maximum permissible errors prescribed in the Ministerial Regulation. The competent officers shall grant the verification and affix or display the verification marks on those instruments.

9- Structure of Metrological Control Authorities

9-1- Department of Metrology

- Implementation of the National Metrology Platform.
- Issuing document concerning to: granting, issuing licenses and permits to manufacturers, importers, exporters, repairers and sellers of weighing and measuring instruments.
- Calibration, Verification, Re-Verification and Inspection of the Weighing and Measuring instruments.
- Establishment of the work plan and monitoring the implementation.
- Dissemination of the national metrology technology.
- Training staff on metrology.
- Establishment and maintenance of industrial and legal metrology laboratories; and
- International relations and cooperation dealing with metrology.

9- Structure of Metrological Control Authorities (continued)

9-2- Provincial Metrology Office

- Calibration, Verification, Re-Verification and Inspection of the Weighing and Measuring Instruments used in business transaction in their local levels.

10- Recent Development

10-1- UNIDO Project

UNIDO Project had assisted the Dept. of Metrology in the field of Metrology and Standards. The activities include:

- Assisted to draft the Legislation on Metrology,
- Provided Standards for Mass Lab.
- Constructed one newly building (National Laboratory Level).
- Will prepare to establish the Volume, temperature, Pressure and Electricity Laboratories.

10-2- PTB Assistance

PTB Assistance had provided some metrology instruments and agreed to conduct the training course in the field of Mass and Volume to the Dept. of Metrology.

10-3- Mitutoyo Asia Pacific Pte. Ltd.

Mitutoyo Asia Pacific Pte. Ltd. donated the Dimensional measuring instruments to the Dept. of Metrology and conducted the short training course to the officials of the Dept. of Metrology on how to operate the apparatus.

11- Expectation

- At the end of the training course I will gain a good experiences and new idea from all Presenters and Participants.
- The training course will build up my capacity and I am able to implement the metrology services in my country in effectiveness.
- This training course will strengthen and harmonize the method of verification of NAWI among the member of APLMF and in the Regional Metrology Organizations.

Thank you for your kind attention

Legal metrology of NAWI in Shanghai

Presentation by

He Xiaowei

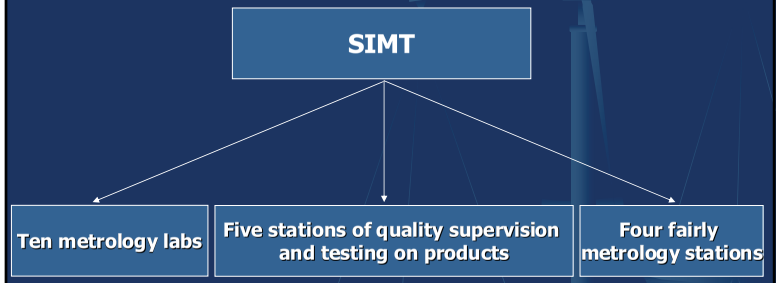
Mechanical Department , SIMT

November 2004

Introduction to SIMT

- **SIMT**

Shanghai Institute of Measurement and Testing Technology



Ten metrology labs

- length
- temperature
- mechanics
- electromagnetics
- optics
- acoustics
- chemistry
- radio and microwave
- time and frequency
- radiation measurement

Five stations of quality supervision and testing on products

- computer product
- environmental product
- electronic product
- gold-silver product
- jewelry

Four fairly metrology stations

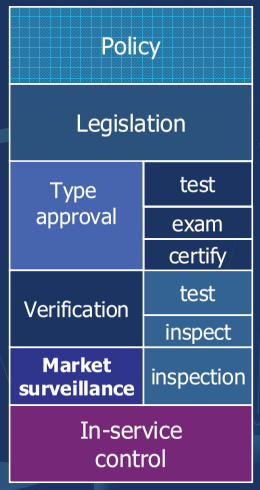
- gas
- capacity
- glasses
- area of house

SIMT operational roles

- Shanghai Legal Metrology
- Policy and Legislation
- Measuring Instruments Certification
- Calibration and Standards
- International
- Training

- **Shanghai Legal Metrology**

Conformity control of measuring instruments ----general model



What is a NAWI

- ***Non-automatic Weighing Instrument*** :
  Instrument that requires that intervention of an operator during the weighing process to determine the weighing result or to decide that it is acceptable. (OIML definition)

- ***Non-automatic weighing instruments are covered by OIML R76.***

Legal Metrology System of NAWI

Ensuring confident consumers

Traders

↑

Manufactures

↑

type approval

SIMT

↑

traceability of measurement

National Measurement Institute

Stage in getting a NAWI onto the market for legal use

Type approval

↓

Inspected by government

↓

Put onto market

Our operational role on NAWI

- verification of imported measuring instruments
- verification, testing, calibration of ordinary measuring instruments
- compulsory verification in trade
- type approval for new measuring instruments
- **our aims:**

  accurate measurement

  fair measurement

Test for type approval under OIML R76

- Metrological

  e.g. Performance (linearity / hysteresis), discrimination, eccentricity, tare, span stability, tilt;
- Electrical

  e.g. power voltage variations, short term power reductions, electrostatic discharge, bursts (transients), electromagnetic suscepubility;
- Environmental

  e.g. static temperatures, damp heat, steady state

Testing equipment in SIMT

- Environmental testing
  - five environmental test chambers
  - One of largest walk-in environmental test chambers (3m long, 2.4m wide & 2.5m high) which allows all temperature testing (+100℃ to -60℃) and humidity testing (up to 98%) to be achieved quickly.
- EMC testing (electromagnetic compatibility)
  - semi anechoic shielded chamber
  - a fully equipped open area test site
  - anechoic chamber
- personal
  - qualified and experienced engineers

Weighing Instruments Manufactures in Shanghai

- more than 40 companies in Shanghai
- include: private company,
  merged company,
  state corporation,
  transnational enterprise
- type of products :
  price-computing instrument, price-labeling instrument, electronic instrument…

www.simt.com.cn

Shanghai Institute of Measurement and Testing Technology

No.1226, Changle Road, Shanghai

or No.716, Yishan Road, Shanghai

Tel: +86 21 62483942

Fax: +86 21 62481097

hxwecust@163.com

SIMT

Legal Metrology- Hong Kong Special Administrative Region (HKSAR)

Presented by :

TSANG Chi Kin – Chemist of the Government Laboratory

Weights and Measures Ordinance – Chapter 68

- The whole ordinance is readily available in the internet (www.justice.gov.hk)
- Keyword Search : Chapter 68
- Bilingual (English and Chinese)
- The whole ordinance consists of 38 Sections and 3 Schedules

Enforcement of the Weights and Measures Ordinance

- Under the purview of the Customs and Excise Department;
- Roles of the Government Laboratory :
- Assists in law enforcement by provision of analytical and advisory services in relation to :

Roles of the Government Laboratory

- Section 2 : Quantity includes mass or weight, length, width, height, area, volume, capacity and number;
- Section 12 : Fraud in using for trade of weighing or measuring equipment;

Roles of the Government Laboratory

- Section 19 : Short weight or measure, etc. (short of the quantity purporting to be supplied or less than that which corresponds to the price charged for those goods.)
- Section 35 : Evidence by certificate (Reporting the findings for the submitted samples) Roles of the Government Laboratory

Current Situation

- In general : Satisfactory;
- Preliminary testing carried out by Customs and Excise Department;
- Number of cases : less than 10 per month
- Mostly related to

(i) short weight or measure

(ii) fraud weighing or measuring equipment.

End of Presentation

Thank you very much

OVERVIWE
OF
MEASUREMENT SYSTEM &
THE ROLE OF THE TRADE MEASUREMENT INSPECTOR IN INDONESIA

Presented by

ANAK AGUNG MADE DARMAWAN

DIRECTORATE OF METROLOGY
THE MINISTRY OF TRADE
OF THE REPUBLIC OF INDONESIA

INDONESIA

- Located : between Australia & Asia Continents.
- Surface area : 1.900.000 km^2
- Population : ± 200.000.000
- Main Islands : Sumatra, Java, Kalimantan, Sulawesi & Irian
- Seasons : Dry and Wet
- Capital City : Jakarta

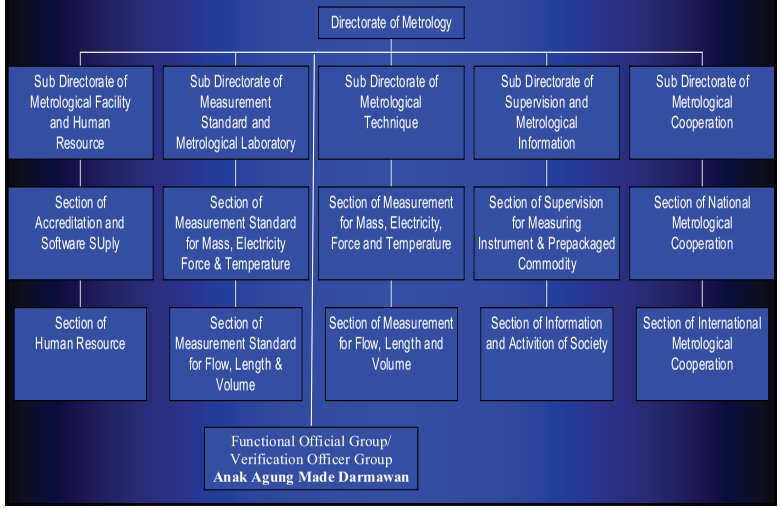
ORGANIZATION

Directorate of Metrology is under the Ministry of Industry and Trade

Directorate of Metrology to consist of :

1. Sub Directorate of Metrological Facility and Human Resource
2. Sub Directorate of Metrological Cooperation
3. Sub Directorate of Measurement Standard and Metrological Laboratory
4. Sub Directorate of Metrological Technique
5. Sub Directorate of Supervision and Metrological Information

The Organizational Structure of Directorate of Metrology



Laboratory of the Directorate of Metrology

- Laboratory of Mass
- Laboratory of Force
- Laboratory of Pressure
- Laboratory of Length
- Laboratory of Volume
- Laboratory of Temperature
- Laboratory of Electric
- Laboratory of Health & Environment

International Organization Membership

- Indonesia became a Member State of the Organisation Internationale de Metrologie Legale (OIML) in September 1960, and
- Has been a Member State of the Asia Pacific Legal Metrology Forum (APLMF) since its establishment in 1994

LAW & REGULATIONS

- **Law : No. 2, 1981 Regarding Legal Metrology**
- **Regulations :**
  - **No. 2, 1985 concerning Measuring Instrument subject to verification**
  - **No. 10, 1987 concerning Legal Units of Measurement**
  - **No. 7, 1989 concerning the National Standardization Council**
  - **No. 2, 1989 concerning the National Standards for Measurement Units**

Present Situation

Metrology services formerly covered 26 Metrology branch offices and 28 Metrology section offices, since 1995 Directorate of Metrology is under the Ministry of Industry and Trade, Metrology services formerly has increased to 26 Metrology branch offices and 284 Metrology section offices.

As the consequences at the case

Directorate of Metrology have a function:

1. **to need for operational facilities, fund and Human Resources haven't been fulfilled, except center offices, which have been carrying out its operational work.**
2. **to need a maintenance and improvement of standard and laboratory facility.**
3. **to need of enforcement of Legal Metrology.**
4. **to need for cooperating of Metrology regional and International.**
5. **to be carried out and supervised of Legal Metrology**

The main tasks of the Directorate of Metrology :

- to conserve standard measurement;
- (re) verification of legal measuring instrument;
- supervise legal measuring instrument;
- pre-packaged goods and giving metrology information;
- to draw up technical regulations for measuring instruments;
- to implement relations with the OIML

Instrument subject to legal control

Measuring instruments used in :

- **the public domain,**
- **custody transfer,**
- **determination of yield and wage,**
- **trade or business transaction,**
- **determination of factory final product,**
- **enforcement of regulation,**

are subject to legal control. This covers measuring instruments for : mass, length, volume, moisture, force, pressure, electrical power, taximeters and its standards.

Services responsible for metrology

The National Standardization Council has established a National Standardization System, according to which there are three services (institutes) responsible for :

- **the Legal Metrology Service (under DOM),**
- **the Technical/Science Metrology Service (under the Indonesian Institute of Sciences),**
- **the Nuclear Radiation Metrology Service (under the National Atomic Energy Board).**

Directorate of Metrology is the national issuing authority for Type Approval Certificate for imported measuring instruments and Pattern Approval Certificate for domestic product of measuring instruments

Future Prospect

- Indonesia has laid down the metrology in the Law No. 2, 1981 regarding Legal Metrology
- Metrology in Indonesia has better prospect in the future, because there are many new measuring instruments which have been being carried out
- Preliminary establishment of market economic system in case of entering into free market

Terimakasih atas Perhatiannya

Thank you

for your attention

Shanghai, November 7th 2004

AIST

Self-Introduction

Satoshi Matsuoka
Legal Metrology Division,
National Metrology Institute of Japan
and
Center for System Verification
AIST

AIST

My Career

- ～March, 2000
  Graduate student of Nagoya Institute of Technology
  studying mathematical logic
- ～June 2002
  Working at some software companies
  developing Java programs
- June 2002 ～ March 2004
  Postdoc at Laboratory for System Verification of AIST
  participating in cooperative research project on software of weighing instruments
- July 2004 ～
  employed at NMIJ as a permanent researcher
  carrying out work on software of measuring instruments
  also participating in cooperative research project on secure software update

AIST

Some Talks and publications on Legal Metrology

1. Model Checking a clause of OIML R 76-1, International Conference on Advanced Mathematical and Computational Tools in Metrology, Torino, 2003 September
2. Integrity Check of Embedded Software via Internet, Workshop on Future Aspects of Software and IT in Legal Metrology, Ljubljana, 2003
3. Integrity check of embedded software in weighing instruments via Internet OIML Bulletin VOLUME XLV, Number 2, April 2004
4. Improvement on Integrity Checking System for Software in Weighing Instrument accepted for oral presentation in International Metrology Congress, Lyon, 2005

AIST

Why am I working on software of measuring instruments?

- I'm going to talk about this topic on Friday.

Visual Inspection

Satoshi Matsuoka

What is Visual Inspection?

- A field inspector goes to a weighing instrument that should be verified
- Check the weighing instrument
  1. by observing the information on the weighing instrument and
  2. By observing the information on the documentation (test report) for the weighing instrument
- Not put a load on the weighing instrument

The information on a weighing instrument

Look at the data plate

1. The name of manufacturer
2. The name of Model
3. Serial Number
4. Certificate Number
5. Max, Min, e, accuracy class

Also the environment on which the weighing instrument (whether is the weighing instrument level?, etc)

The information on a test report

1. Test report number
2. The date of test
3. Type of test verification (certification or in-service inspection)
4. The name and address of owner
5. Address of instrument (for gravity)
6. Description of instrument (multi-interval scale?)

WEIGHTS AND MEASURES ACT 1972

METROLOGY LEGAL UNIT
ENFORCEMENT DIVISION
MINISTRY OF DOMESTIC TRADE
AND CONSUMER AFFAIRS

Weight and Measures Act 1972

INTRODUCTION

- **Weight and Measures Act 1972** was gazetted on 30 March 1972 and has been enforced since 1 January 1981.
- 10 years of transition period was granted by the Government of Malaysia to enable all parties to understand and fully assimilate the new Act.

OBJECTIVES

A. To ensure only the S.I unit is used for measurement throughout Malaysia;

B. To ensure all weight and measures instruments being used for trade complies with the specifications standard, being verified and re-verified by the Weight and Measure Inspector;

C. To monitor all manufacturers, repairers and sellers of weight and measure instrument vide issuance of license.

VERIFICATION

1. **All weight and measure instruments used for trade purposes have to be verified & re-verified and marked by Weight and Measure Inspector prior to issuance of Certificate.**
2. **The Minister is authorised to fix the fees for all verification. – Section -14(4A).**
3. **The Weight and Measure Inspector is authorised to reject any weight and measure instrument submitted for verification.**
4. **The Weight and Measure Inspector has to adhere to the Working Standards or other appropriate testing equipment for verification.– section 14(1A).**

VERIFICATION

5. The Chief Inspector of Weight and Measure can determine the place and time to carry out the verification – section 14(4B)
6. Inspector of Weight and Measure has the right not to verify any instruments if found to be not in conformity with the Act. – section 14(5)
7. The instruments of weight and measure which was verified by the Inspector shall be acknowledged as final and conclusive.
8. The Working Standards of the Inspector which has been verified and acknowledged by SIRIM shall not be questioned and should be received as lawful accreditation which shall be final and conclusive.

AUTHORITY OF THE INSPECTOR

1. Inspector of Weight and Measure is authorised to reject any weight and measure instruments which does not comply with any of the provisions in the Act and regulations or does not have the approval of the Custodian – section 14(5)
2. Inspector is authorised to seek assistance from the owner of the instrument in the course of carrying out his duty. – section 14A(1).
3. The Inspector may at the request of any person, inspect any weight or measure or instrument for weighing or measuring not used for trade. – seksyen 14A (4)
4. The Inspector is given the power to conduct prosecution – seksyen 27 A

AUTHORITY OF THE INSPECTOR

5. **Power to inspect weights and measures, etc., and to enter premises**

The power of the Inspector to conduct and enforce the Act and regulations made therein – section 28 (1).
Power to inspect , enter premise, seize and detain any goods or documents and etc.

THANK YOU

LEGAL METROLOGY UNIT
ENFORCEMENT DIVISION
MINISTRY OF DOMESTIC TRADE AND CONSUMER AFFAIRS
MALAYSIA

CENTRO NACIONAL DE METROLOGIA
Dirección de Metrología Mecánica
División de Metrología de Masa y Densidad

MEASUREMENT SYSTEM AND ROLE OF THE TRADE MEASUREMENT INSPECTOR IN MÉXICO

Eduardo González E.
Mass Division, National Center of Metrology
CENAM

CENTRO NACIONAL DE METROLOGIA
Dirección de Metrología Mecánica
División de Metrología de Masa y Densidad

MEASUREMENT SYSTEM

In Mexico, the Federal Law for Metrology and Standardization has established that the International System of Units (SI) is unique and obligatory use

Quantity	SI base unit	
	Name	Symbol
Length	meter	m
Mass	kilogram	kg
Time	second	s
Electric current	ampere	A
Thermodynamic temperature	kelvin	K
Amount of substance	mole	mol
Luminous intensity	candela	cd

CENTRO NACIONAL DE METROLOGIA
Dirección de Metrología Mecánica
División de Metrología de Masa y Densidad

OTHER SYSTEMS

The Federal Law for Metrology and Standardization has established in case of using another system of units. It must express jointly with SI and its equivalence

for example

10.50 lb (4.76 g) (Mass)
20.2 yard (18.5 m) (Length)

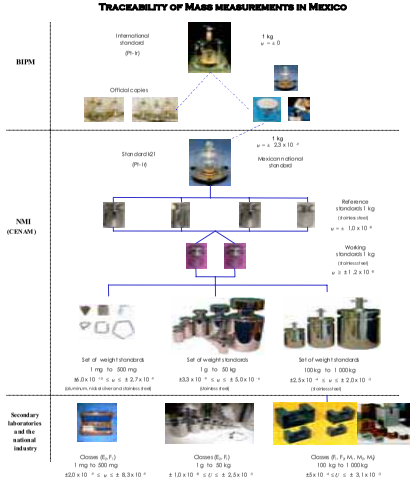
CENTRO NACIONAL DE METROLOGIA
Dirección de Metrología Mecánica
División de Metrología de Masa y Densidad

CENAM

National Center of Metrology (CENAM) is the National Measurement Institute of Mexico. CENAM is responsible of the maintenance and dissemination of the units of measurement.

For example

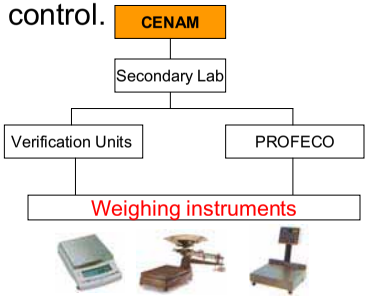
The unit of mass through the National Prototype kilogram No 21.



CENAM

CENAM gives calibration services to secondary laboratories, and then to the verification units which are responsible of the verification of the instruments that are subject to a metrological control.

For example:



SYSTEM TRACEABILITY WITH APPLICATION FIELD OF LEGAL METROLOGY IN MEXICO

NATIONAL CENTER OF METROLOGI (CENAM)
National standard

Federal Agency of Consumer Protection

Accredited laboratories calibration

Accredited organizations verification

LIQUID PRODUCT COMMERCE	GAS STATION SERVICE	SUPERMARKETS IN GENERAL	MEASURES OF ENVIRONMENTAL CONTAMINATION	PERSONAL SERVICE AND WORKINGS	MANUFACTURE OF INSTRUMENTS TO MEASURE	SERVICES OF HEALTH
Road Thank flow measurers and volume	measuring pumps and measures volume	weights, balances, packaged measures of volume, tapes and products	measurers of environmental contamination in vehicles	Taximeters and clocks	Pattern approval and initial verification	Thermometer hospital, Pressure blood and syringe

PATTERN APPROVAL

All instruments that will be used for trade should have a pattern approval before putting in use and periodic metrological control

Some these instruments are:

- Weighing instruments,
- Taximeters,
- Pumps (gasoline) and other

METROLOGICAL CONTROL

In order to satisfy the demand for metrological control of the Weighing instruments, Federal Law authorizes Verificaction Units which make these services.

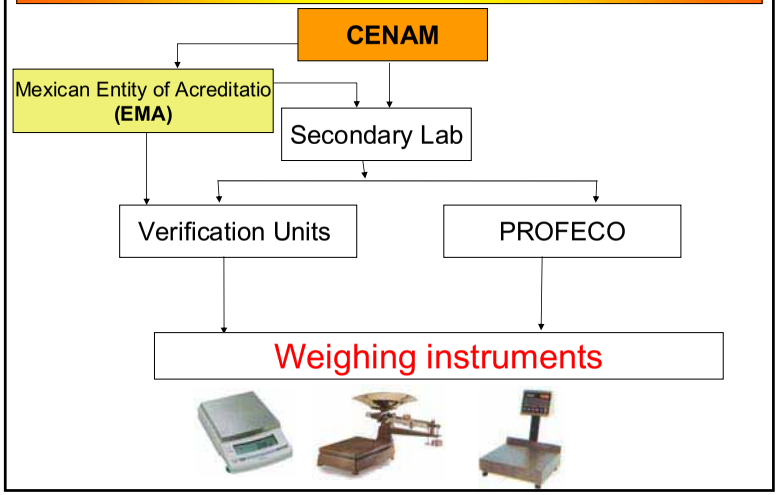
The Verificaction Units do the metrological control to instruments by asking of the users but, can not penalty to user.

MEXICAN ENTITY OF ACCREDITATION

Mexican Entity of Acreditatio (EMA) is a private entity.

EMA is one who offers the accreditation to organizations of the metrological evaluation and technical requirements test

For example:
Laboratories of calibration and Verification Units
The verification Units helps metrological control in México



UNITS VERIFICATION

At present, there are 9 Verification Units in our country to make verifications to Weighing instruments.

a very small amount

FEDERAL AGENCY OF CUSTOMER PROTECTION (PROFECO)

is responsible for the **inspection** and **infringement** of the instruments and to put penalties when the instruments are out of the maximum permissible error according to the national standard.

PERIODICY

The verification of instruments is obligatory at least once a year, but user could ask for verification in a voluntary way.

THE INSPECTORS

The inspectors are people who visit markets and shopping places where they do verification on instruments randomly in order to verify if the maximum permissible errors in trade is OK

The inspection of an instrument can be of a surprise or through a denunciation on the part of the consumers

THE INSPECTORS

Additionally the inspectors verify the fulfillment of the 7 basic rights of the consumer:

1. Rights for information,
2. Rights for education in the matter of consumption to know its rights, and to know how it protects the law,
3. Rights to choose,
4. Rights to the security and quality,
5. Rights to not being discriminated,
6. Rights to the compensation, When the suppliers of goods and services do not fulfill the fiance and
7. Rights to the protection

COUNTRY REPORT

Train the Trainer Course on the Verification of Non-Automatic Weighing Instruments

November 8 – ***November 12, 2004***

G. KHISHIGDELGER
Mongolian Agency for Standardization and Metrology

Mongolia

Background

Mongolia is a landlocked country in North EAST Asia with large area of approximately 1.566.500 square kilometers with a frontier with Russia and China. Population of Mongolia is relatively small – 2.6 million people. Ulaanbaatar is the capital city of Mongolia. One third of the population live in Ulaanbaatar.

The average temperature in January is 15-25 degrees below zero. The average precipitation in Mongolia is about 200-220 mms a year, denoting a dry climate. There are 200 sunny and clear days a year in Mongolia.

Agriculture provides a livelihood for 50% of the population. Livestock farming predominates; in 2001 rangelands carried some 25.9 million head of large farm animals, (11.9 million sheep, 9.5 million goats, 2.0 million cattle, 2.1 million horses and 0.3 million camels). Some 25 million hectares of land are classified as grazing land, about 0.6 million as arable land.

CONTENTS

1. General Information about the MASM

Since Mongolia has entered to the globalized new century among with the world community, the national standardization and metrology body has begun formulating strategies and goals for future development. The present developing period of market economy drives us to the widening of our scope of standardization, metrology, certification and accreditation, to harmonize those activities with international trends and to facilitate industry, trade and service.

The MASM looks forward to continue our further relationship with the international, regional, foreign and domestic bodies and others, with whom we work.

Mission:

To contribute to the social and economic development of Mongolia through the development strategic tendency by applying standardization, quality and metrology.

Laws:

- **Standardization and Quality certification, 2003**
- **Traceability of Measurement Uniformity, 1994**
- **Protection of Consumer rights, 1991**

1.1. Brief history:

By the government resolution in 1923 was established Weights and Measures Sector under the Minister of Finance and in 1944 this section was reformed as a Department of Weights and Measures. In 1949 was set-up Department for the repair and service of measuring instruments and later joined to the existing Department Weights and Measures. This department was reformed to Chancellery for standards Measure and Measuring instruments in 1959. From the Chancellery it was reorganized as National Center for Metrology service under the State Committee of Price and Standards . From 1988 it has introduced function of research and has been renamed as a Science and Industrial concern "Metrology" under the National Development Board of Mongolia. In 1992 National Metrology Center has been merged with National research Institute for Standardization and Metrology

1924 – Weights and Measures Unit

1931 – Commission on Measuring instruments

1944 – Weights and Measures Division

1953 – Bureau of Price and Standards

1955 – Administration for Measures and Measuring Instruments

1958 – Administration for Standards, Measures and Measuring Instruments

1972 – State Committee of Quality, Standards and Measures

1975 – State committee of Price and Standards

1988 – State Department of Standards

1990 – National Research Institute of Standardization; General Department of Metrology Bodies

1992 – Mongolian National Center for Standardization and Metrology

2002 – Mongolian Agency for Standardization and Metrology

1.2. Main functions

- Standardization
- Certification
- Development of national measurement standards
- Legal metrology
- Accreditation
- International cooperation

The MASM undertakes the following activities of its functions:

Standardization

National Council of Standardization confirms National standards (MNS) on the basis of mutual consensus representing government, manufacturers, businessmen and consumers' interest.

There are 24 technical committees and 17 subcommittees at the MASM. The MASM is: Participating (P) – member of 12 ISO/TCs and 23 ISO/TC/SCs

Observer (O) – member of 42 ISO/TCs and 16 ISO/TC/SCs.

Main activities:

- § Management and coordination of the activities of national standardization technical committees
- § Harmonization of the national standards with the international ones
- § Coordination of implementation of WTO Technical barriers to trade agreement
- § Implementation and transfer of new and advanced technology through the international and regional standards

Figures / 2002:

There are 3770 Mongolian standards, 28% of them were harmonized with international standards level.

Certification

Main objectives:

- **To improve national economic capability and facilitate export grading-up quality, faithfulness and competitiveness of domestic products**
- **To ensure occupational health and safety, environment protection and quality improvement**
- **To protect customers and promote trade on the basis of suppliers quality assurance and competence of product quality**

Main activities:

Product or service quality certification:

- **Certificate of conformity**
- **National conformity mark**
- **Quality certificate of product**

Management system certification:

- **Quality management system MNS ISO 9001:2001**
- **Environmental management system MNS ISO 14001:2001**

Training on quality management and environmental management system:

- **In accordance with training program at MASM**
- **In - house**

Figures by 2002:

230 products (namely) of 36 companies has been granted conformity mark.

National measurement standards

Main activities:

- Development of national measurement standards system
- Maintenance and improvement of accuracy of measurement standards
- Dissemination of national measurement units
- Development and registration of Certified Reference Materials
- Calibration of measurement standards and high accuracy measuring instruments
- Proficiency testing scheme

The agency maintains the Mongolian national measurement standards for the SI unit of mass, time and frequency, DC &AC voltage and DC resistance, solid density, pressure, temperature, and volume.

CRM's laboratory has been certified and registered 35 CRMs.

- **The Metrology Department of MASM performs to establish national measurement standard system MASM has worked out the "National Program for the Development of National Standard system 1999-2001" which was adopted by the Mongolian Government in late 1998. This program is realizable by the extension of international cooperation and by the development of a highly qualified and well trained scientific and technical staff.**
- **In 1979, the time and frequency Standard was approved as a first national measurement standard. The Time and Frequency Standard Laboratory is maintaining "Ceasium - 3", and Rubidum Cht - 9'atomic clocks and reproducing "second", unit of time accuracy $1*10^{-11}$**
- **$1x10^{-8}$ accuracy of "kilogram", unit of mass has been achieved frame of the "project on support to the Mongolian Legal Metrology", by German Government grant aid in 1996-1998. Mass standard was approved as a National Standard by Mongolian Government in 1999.**
- With Russian Federation in 1994-1997, voltage Standard was established with accuracy of $6x10^{-7}$ and approved by the Government of Mongolia as National Voltage Standard in January 1999

Volume Standard was established with accuracy of 0.03%, and approved by the Government of Mongolia, by the German Government grand aid in 1996-1998

- DC resistance standard was established with accuracy 1.2 ppm and approved by the Government of Mongolia in 2001
- AC voltage standard was established with accuracy 50 ppm and approved by the Government of Mongolia in 2002

Legal metrology

Main activities:

- **Pattern approval of measuring instruments**
- **Verification of mandatory instruments as required by law**
- **Licenses for manufacture, repair, service and sale of measuring instruments**
- **Training**

The Metrology Department carries out verification more than 50 thousands instruments of fields of mass, force, hardness, length, volume, flow, heat, pressure, electricity and magnetic measurement in every year. About 90 percent of all mandatory measuring instruments are verified by the state verification officers.

Figures / 2002:

Over 100 types of measuring instruments were issued the pattern approval certificates.

67 companies and bodies were granted the licenses for their business of manufacture, repair, sale and hire of measuring instruments.

Accreditation

Objectives:

- To confirm technical competence of conformity assessment bodies to carrying out specific activity
- To upgrade the national accreditation facility in accordance with international conformity assessment procedures
- To promote the mutual recognition of test report and certificate from accredited laboratories and registrars/certifiers at the international and regional level
- To assist consumers to select verified products and services through accredited conformity assessment bodies

Accreditation programs:

- Testing/calibration laboratories
- Product certification bodies
- Technical inspection bodies
- Management system registrars/certifiers
- Personnel certification bodies

Figures / 2002:

Accredited:

- Testing laboratories – 46
- Calibration laboratories – 28
- Product certification bodies - 8

Testing types of accredited laboratories:

- For food and agricultural products – 23
- For Raw materials of mineral – 8
- For building materials – 4
- For wool, cashmere and leather goods – 5
- For metal research – 2
- For medical treatment and diagnose - 4

Measuring types of the accredited laboratories:

- For mass measurement – 7
- For volume and flow measurement – 6
- For electricity measurement – 7
- For heat and pressure measurement – 6
- For digital measurement – 1
- For meteorology measurement– 1

International cooperation

Aim:

To join specialist international organizations, develop cooperation with relevant international, regional and foreign bodies and mutual agreement on conformity assessment results.

Membership:

- **ISO - International Organization for Standardization, full member 1979**
- **IEC - International Electro technical Commission, affiliate country programme 2000**
- **OIML - International Organization for Legal Metrology, a corresponding member 1998**
- **APLMF - Asia Pacific Legal Metrology Forum, 1997**
- **APMP - Asia Pacific Metrology Programme, 2002**
- **PASC - Pacific Area Standards Congress, 2002**
- **IRSA - Inter-Regional Standardization Association, 1997**
- **AFIT - Asian Forum of Information Technology, 1997**
- **AIIN - Asian ISO 14000 Information Network, 1998**
- **EAFTerm - East Asian Forum on Terminology, 1998**
- **NCSL International – National Conference of Standards Laboratories International, 2002**

Mutual recognition agreements:

The Cooperation agreement on the Quality Certification and Mutual Recognition of Import and Export Commodities between the Government of Mongolia and the Government of the People's Republic of China

The Cooperation agreement on the Mutual Recognition of Certification Import and Export Commodities between the Ministry of Trade and Industry of Mongolia and the State Committee of the Russian Federation for Standardization, Metrology and Quality certification.

Bilateral cooperation under memorandum of understanding and agreement on cooperation:

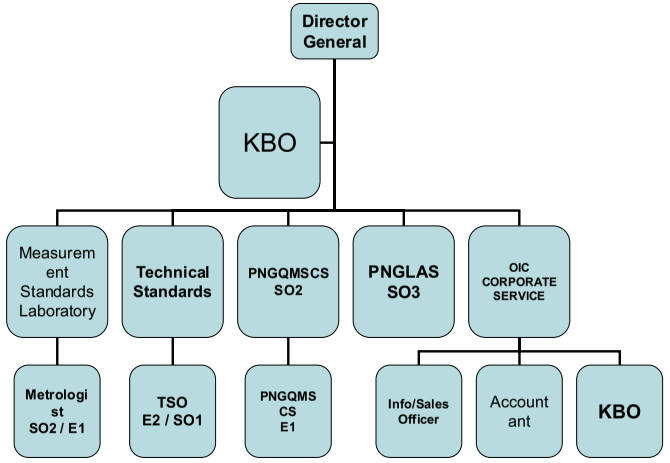
- **KRISS - Korea Research Institute of Standards and Science**
- **KSA - Korean Standards Association**
- **KATS - Korean Agency for Technology and Standardization**
- **SCBTS - China State Bureau of Technical Supervision**
- **TSE - Turkish Standards Institute**
- **DSTU - The State Committee of Ukraine of Standardization, Metrology and Certification**

PAPUA NEW GUINEA NATIONAL INSTITUTE OF STANDARDS & INDUSTRIAL TECHNOLOGY (NISIT)

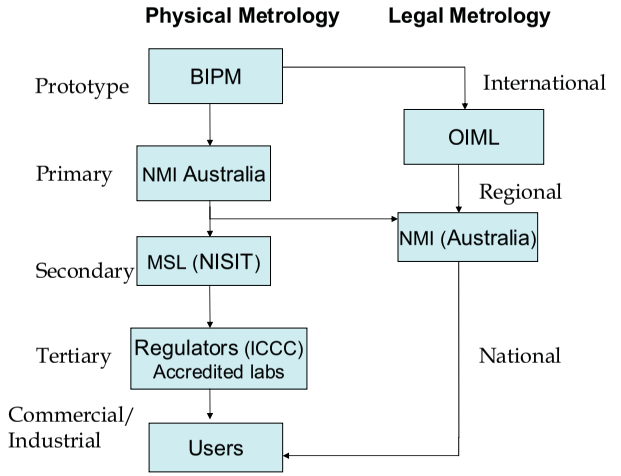
NISIT in Brief

- An Act Passed By Parliament in 1993 known as the NISIT Act 1993
- Measurement Standards Laboratory (MSL) – department in NISIT
  - Calibration and verification activities
  - Custodian of PNG National Physical Measurement Standards

The NISIT Structure



Traceability of Measurement



Trade Measurement Inspector

Independent Consumer & Competition Commission (Regulator)
Consumer Protection Body

Regulate under:

✓Trade Measurement Act Regulation
✓Packaging Act Regulation
✓Bread Act Regulation

Under the Trade and Measurement Act:

Deals with Weights and Measures for Trade use

Role of Trade Measurement Inspector

- Accept scales (weighing instruments) that has approval from:
  - National Standards Commission (NSC – now NMI)
  - American Weights and Measures
  - British Board of Scales

Role of Trade Measurement Inspector

- Check and verify all measuring equipment that are used for trade:
  - Light capacity scales
  - Heavy capacity scales
  - Safety scales (airport scales)
  - Shop scales
  - Pharmaceutical scales

Way Forward

- NISIT hopes to gain from this training:
  - Update on verification procedures of NAWI
  - Disseminate verification procedures through training programs to regulators (ICCC) and industries
  - To support ICCC through provision of NAWI verification service

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National Metrology Service - INDECOPI
(Servicio Nacional de Metrología - INDECOPI)

Aldo Martín Quiroga Rojas
Responsible Technical Incumbent

November, 2004

indecopi

NATIONAL METROLOGY SERVICE

- **EXPOSITION'S TOPICS**
- INDECOPI
- NATIONAL METROLOGY SERVICE (SNM)
- MASS LAB (SNM)
- NATIONAL METROLOGY LABS OF SOUTH AMERICA

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INDECOPI

•1983 - SNM - ITINTEC (Law N° 23560)

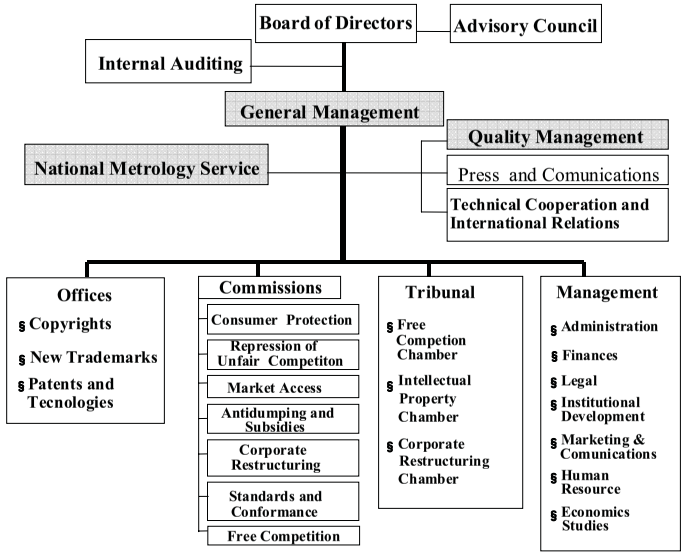
•1993 - SNM - INDECOPI (DS-024-93/ITINCI)

- ISO 9002:1994
- ISO 9001:2000

INDECOPI
ADDRESS: Calle de la Prosa 138, San Borja
Lima 41 - PERU

TELEPHONE: 51-1-2247800. (1331)

indecopi



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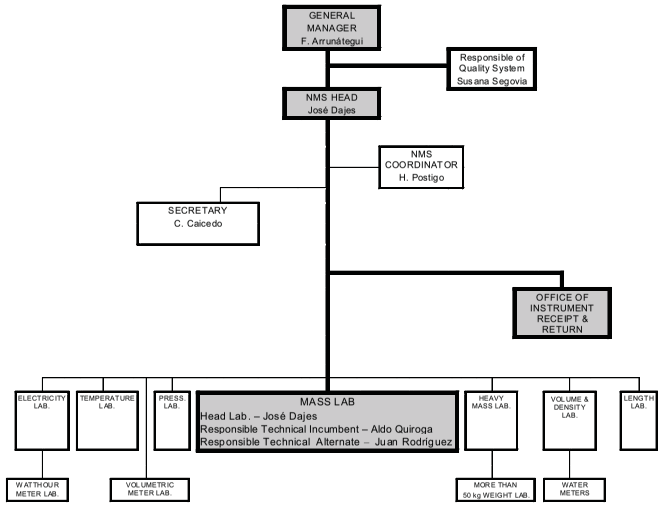
NMS's ORGANIZATION CHART



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Deutscher Kalibrierdienst (DKD)

Physikalisch-Technische Bundesanstalt (PTB)

DAR registration number: DKD-K-35001

2003-01-13

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Calibration or Measurement Service

Mass	weights	Double substitution	1 mg	1 kg	R 111
Mass	weights	Double substitution	2 kg	50 kg	R 111
Mass	weights	Double substitution	50 kg	1 000 kg	R 111
Mass	Balances of classes special and high	OIML R 76 (1992)	5	50 000	g
Mass	Balances of classes medium and ordinary	OIML R 76 (1992)	3	500	kg
Mass	High capacity weighing machines	OIML R 76 (1992)	500	100 000	kg
Mass	Highway weigh-in-motion (WIM) systems	ASTM E 1318 - 90	500	15 000	kg
Mass	Discontinuous totalizing automatic weighing instrument (totalizing hopper weighers)	OIML R 107-1	1	4 000	kg
Mass	Automatic catchweighing instruments	OIML R 51-1	500	50 000	g
Mass	Continuous totalizing automatic weighing instrument (belt weighers)	OIML R 50-1	1 000	2 000	t/h

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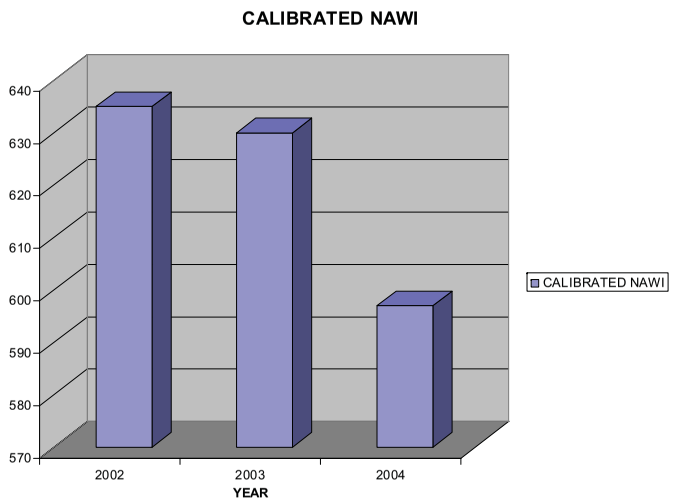

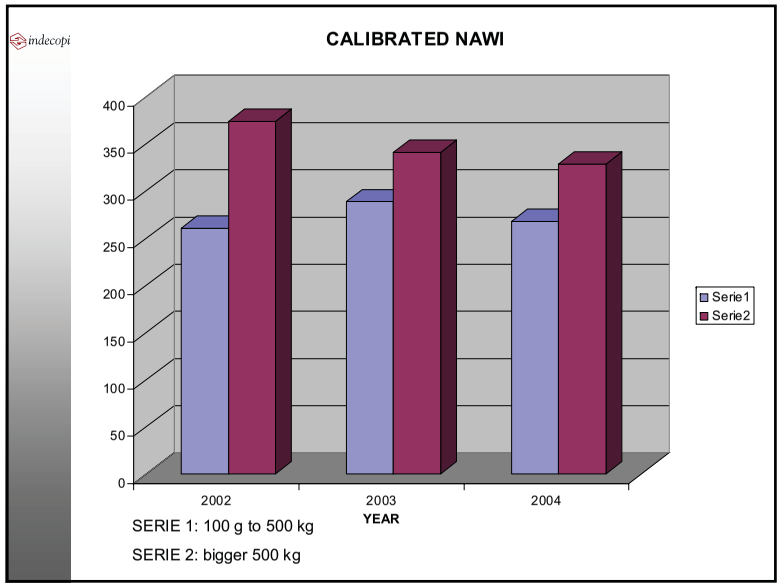
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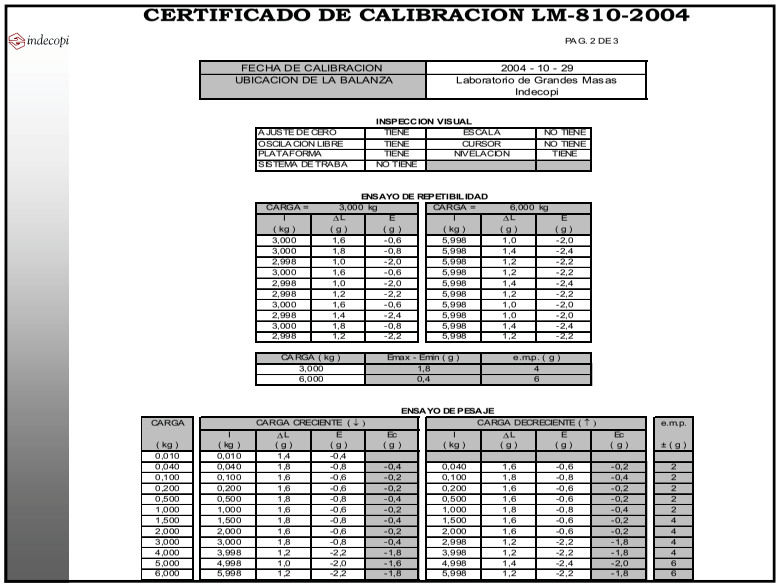
CALIBRATED NAWI
400
350
300
250
200
150
100
50
0
2002
2003
2004
YEAR
Serie1
Serie2
SERIE 1: 100 g to 500 kg
SERIE 2: bigger 500 kg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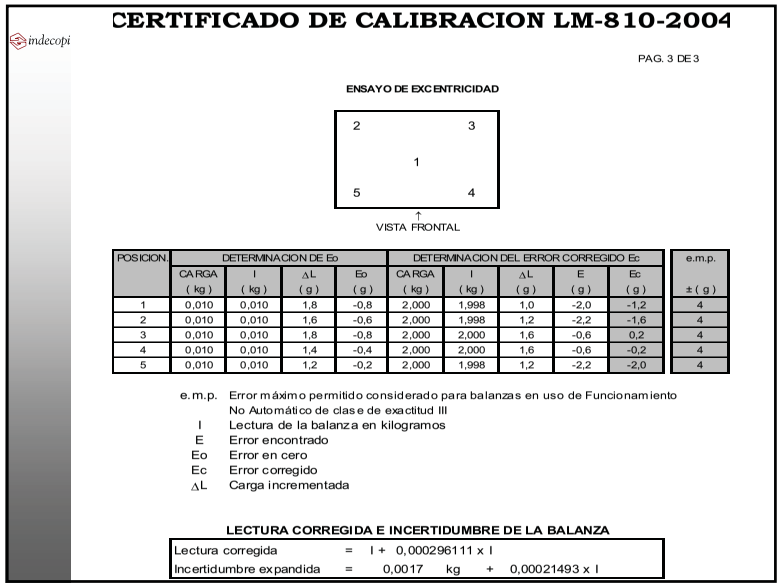
CERTIFICADO DE CALIBRACION LM-810-2004
PAG. 2 DE 3
FECHA DE CALIBRACION 2004 - 10 - 29
UBICACION DE LA BALANZA Laboratorio de Grandes Masas Indecopi
INSPECCION VISUAL
AJUSTE DE CERO TIENE
OSCILACION LIBRE TIENE
PLATAFORMA TIENE
SISTEMA DE TRABA NO TIENE
ESCALA NO TIENE
CURSOR NO TIENE
NIVELACION TIENE
ENSAYO DE REPETIBILIDAD
CARGA = 3,000 kg
I (kg) ΔL (g) E (g)
3,000 1,6 -0,6
3,000 1,8 -0,8
2,998 1,0 -2,0
3,000 1,6 -0,6
2,998 1,0 -2,0
2,998 1,2 -2,2
3,000 1,6 -0,6
2,998 1,4 -2,4
3,000 1,8 -0,8
2,998 1,2 -2,2
CARGA = 6,000 kg
I (kg) ΔL (g) E (g)
5,998 1,0 -2,0
5,998 1,4 -2,4
5,998 1,2 -2,2
5,998 1,2 -2,2
5,998 1,4 -2,4
5,998 1,2 -2,2
5,998 1,0 -2,0
5,998 1,0 -2,0
5,998 1,4 -2,4
5,998 1,2 -2,2
CARGA (kg) Emax - Emin (g) e.mp. (g)
3,000 1,8 4
6,000 0,4 6
ENSAYO DE PESAJE
CARGA (kg)
CARGA CRECIENTE (↓)
I (kg) ΔL (g) E (g) Ec (g)
CARGA DECRECIENTE (↑)
I (kg) ΔL (g) E (g) Ec (g)
e.m.p. ± (g)
0,010 0,010 1,4 -0,4 2
0,040 0,040 1,8 -0,8 -0,4 0,040 1,6 -0,6 -0,2 2
0,100 0,100 1,6 -0,6 -0,2 0,100 1,8 -0,8 -0,4 2
0,200 0,200 1,6 -0,6 -0,2 0,200 1,6 -0,6 -0,2 2
0,500 0,500 1,8 -0,8 -0,4 0,500 1,6 -0,6 -0,2 2
1,000 1,000 1,6 -0,6 -0,2 1,000 1,8 -0,8 -0,4 2
1,500 1,500 1,8 -0,8 -0,4 1,500 1,6 -0,6 -0,2 4
2,000 2,000 1,6 -0,6 -0,2 2,000 1,6 -0,6 -0,2 4
3,000 3,000 1,8 -0,8 -0,4 2,998 1,2 -2,2 -1,8 4
4,000 3,998 1,2 -2,2 -1,8 3,998 1,2 -2,2 -1,8 4
5,000 4,998 1,0 -2,0 -1,6 4,998 1,4 -2,4 -2,0 6
6,000 5,998 1,2 -2,2 -1,8 5,998 1,2 -2,2 -1,8 6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CERTIFICADO DE CALIBRACION LM-810-2004
PAG. 3 DE 3
ENSAYO DE EXCENTRICIDAD
2
3
1
5
4
VISTA FRONTAL
POSICION
DETERMINACION DE Eo
CARGA (kg) I (kg) ΔL (g) Eo (g)
DETERMINACION DEL ERROR CORREGIDO Ec
CARGA (kg) I (kg) ΔL (g) E (g) Ec (g)
e.m.p. ± (g)
1 0,010 0,010 1,8 -0,8 2,000 1,998 1,0 -2,0 -1,2 4
2 0,010 0,010 1,6 -0,6 2,000 1,998 1,2 -2,2 -1,6 4
3 0,010 0,010 1,8 -0,8 2,000 2,000 1,6 -0,6 0,2 4
4 0,010 0,010 1,4 -0,4 2,000 2,000 1,6 -0,6 -0,2 4
5 0,010 0,010 1,2 -0,2 2,000 1,998 1,2 -2,2 -2,0 4
e.m.p. Error máximo permitido considerado para balanzas en uso de Funcionamiento No Automático de clase de exactitud III
I Lectura de la balanza en kilogramos
E Error encontrado
Eo Error en cero
Ec Error corregido
ΔL Carga incrementada
LECTURA CORREGIDA E INCERTIDUMBRE DE LA BALANZA
Lectura corregida = I + 0,000296111 x I
Incertidumbre expandida = 0,0017 kg + 0,00021493 x I


indecopi
South - America
Venezuela
Colombia
Guyana
Suriname
French Guiana
Ecuador
Galapagos Islands
Brazil
Peru
Bolivia
Chile
Paraguay
Uruguay
SOUTH AMERICA
Argentina
Falkland Islands

COUNTRY	NAME
BOLIVIA	Instituto Boliviano de Metrología (IBMETRO)
COLOMBIA	Superintendencia de Industria y Comercio (SIC)
ECUADOR	Instituto Ecuatoriano de Normalizacion (INEN)
PERU	Instituto Nacional de Defensa de la Competencia y de la Protección de la Propiedad Intelectual (INDECOPI)
VENEZUELA	Servicio Autónomo Nacional de Metrología (SENCAMER)
ARGENTINA	Centro de Investigación y Desarrollo en Fisica Instituto Nacional de Tecnologia Industrial (INTI)
BRAZIL	Instituto Nacional de Metrologia, Normalização e Qualidade Industrial (INMETRO)
CHILE	Instituto Nacional de Normalización (INN)
PARAGUAY	Instituto Nacional de Tecnología y Normalización (INTN)
URUGUAY	Laboratorio Tecnológico del Uruguay (LATU)
GUYANA	Guyana Bureau of Standards (GBS)
SURINAME	Metrology Unit

Weights and Measures Programme

by
Adrian Ang
Weights and Measures Office
SPRING Singapore

Weights and Measures Programme

- Introduction
- Objectives
- Organization Chart
- Standards
- Activities
- Future directions

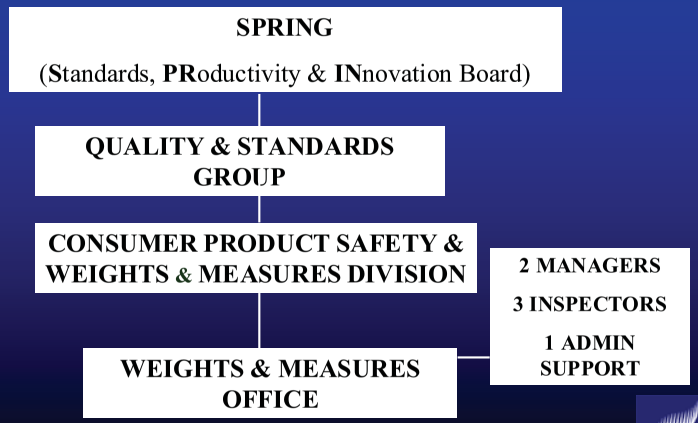
Introduction

- Weights and Measures Office (WMO)- authority for legal metrology
- Metric system with the exception of Chinese unit (tahils)- for trading in Chinese herbs/ medicines

Objectives

- To ensure uniform and accurate system of weights and measures used in Singapore
- Protecting consumers and traders

Organization Chart



Standards

- National standards- National Metrology Centre
- Secondary to working standards- WMO

Activities

- Licensing
- Registration of instruments
- Verification of instruments
  - Flowmeters
  - Fuel dispensers
  - Liquid capacity measures
  - Linear measures
  - Non-automatic weighing instruments
- Training
- Inspection/ spot-checks
- Investigation
- Education

Future directions

- Adopt Average Quantity System
- Authorized Verifiers Scheme
- Incorporate Maximum Permissible Errors based on OIML Recommendations

THANK YOU

WMO Posters & Advertisement

Accuracy Label

SPRING singapore
www.wmo.org.sg

ACCURACY
LABEL
00 Verified:May 04

Introduced on 1 April 2004

APEC/APLMF Training Courses in Legal Metrology
Train the Trainer Course on the
Verification of Non-Automatic Weighing Instruments

Current Situation of Non-Automatic Weighing Instruments in Chinese Taipei

November 12 2004

Current Situation of legal metrology in Chinese Taipei [1]

- In Chinese Taipei, the authority for legal metrology is the Bureau of Standards, Metrology and Inspection (BSMI) under the Ministry of Economic Affairs.

Current Situation of legal metrology in Chinese Taipei [2]

The BSMI oversees the following matters:

1. Establishment and implementation of the national measurement system.
2. Revision of laws and regulations for weights and measuring instruments.
3. Enforcing the use of legal measuring units.
4. Supervision of branch offices.
5. Training of inspectors for weights and measuring instruments.
6. Establishment and dissemination of national measurement standards.
7. Establishment and promotion of Chinese National Laboratory Accreditation system.

Current Situation of legal metrology in Chinese Taipei [3]

- The Measurement Law is called 'The Weights and Measures Act'. It has been setup to regulate standards of weights and measures.it was promulgated in 1929, and was most recently updated in 2003.

Current Situation of legal metrology in Chinese Taipei [4]

- The weights & measuring instruments regulated by the Measurement Law includes :

Measuring instruments	Concentration meters
Scales	Specific gravity meters
Force meters	Ampere meters
Thermometers	Surface area meters
Pressure meters	Luminance meters
Volume meters	Ray meters
Speed meters	Sound lever meters
Heat content meters	Fiber meters
Density meters	

Current Situation of Non-Automatic Weighing Instruments in Chinese Taipei [5]

- At present, the non-automatic weighing instruments subject to type approval, verification and inspection.
- The applicant for type approval of measuring instruments shall have a license for manufacturing or importing measuring instrument.
- Those who manufacture, repair or import weighing instruments must apply for permission and licensing from the BSMI.

Management of Enterprises

- According to the Business Operation Licensing and Administration Regulations of Measuring Instrument Enterprises any person who engages in operating the business of manufacturing, repairing or importing the weighing instruments shall make application to the BSMI, obtain license and completed the procedures for business registration in accordance with relevant laws and regulations before commencing its business operations in our country.

Management of Type Approval [1]

- The scope of non-automatic weighing instruments subject to type approval are as follows:

  Electronic non-automatic weighing instruments:

  with maximum capacity of not less than 1kg and not more than 100kg, and the number of verification scale interval 1000 ~ 10000.

Management of Type Approval [2]

- A type approval certificate for a measuring instrument shall be issued to the applicant after the application for type approval or series type approval has been reviewed and approved by the BSMI.
- The term of validity of a type approval certificate is ten years. The expiration of the certificate will be issued after the BSMI has reviewed and approved .

Management of Type Approval [3]

- The regulation of tests of type approval for non-automatic weighing instruments is call " The technical regulation of type approval for non-automatic weighing instruments "(CNPA76). It is conforming to the OIML R 76.
- The test of type approval for non-automatic weighing instruments is conducted by the Electrical Testing Center which is qualified organizations assessed by the BSMI.

Management of Verification [1]

- The non-automatic weighing instruments subject to verification, excluding the following instruments:
  1. weighing instruments with a number of verification scale interval more than 10,000, excluding pricing weighing instruments
  2. Suspended weighing instruments with a maximum weighing capacity of more than 1t
  3. Bathroom scales
  4. Moving weighbridges and weighing road vehicles in motion used for official inspection
  5. Weighing instruments being marked not for transaction use.

Management of Verification [2]

- The regulation of verification for non-automatic weighing instruments is call " The technical regulation of verification and inspection for weighing instruments "(CNMV76). It is conforming to the OIML R 76,and the tests are including the eccentricity , the weighing performance,and the discrimination.
- Weighing instruments is verified and inspected by the 7th department and other branches of the BSMI.
- All instruments that pass verification will be attached with a qualify sheet.

The End

The Legal Metrology in Thailand

GOAL AND INTENTION

Bureau of Weights and Measures is an organization responsible for supervising manufacturers, importers, repairers, and sellers of weighing and measuring instruments including weighing or measuring service providers; the functions of the Bureau include establishing the standards of weighing and measuring instruments, providing verification services for weighing and measuring instruments, prescribing the displaying methods of net content of packaged goods, and inspecting the net content of packaged goods for the impartiality of the commodity transactions.

DUTIES AND SERVICES

Services of the Bureau of Weights and Measures are divided into 2 categories:

1. Services to be carried out for the purpose of consumer protection through:

    - providing, calibrating, and maintaining the standards of weights and measures
    - prescribing the rules and supervising the businesses of manufacture, import, repair, and sale of weighing and measuring instruments, including the business of providing weighing or measuring services
    - verifying the weighing and measuring instruments and inspecting of such instruments in operation.
    - prescribing the sizes and the displaying methods of pet content of packaged goods and inspecting their net content.
    - prescribing the types of goods which must be traded by weighing and measuring approaches.

2. Services which aim to promote the benchmarks of weighing and measuring instruments for consumers and industrial sector such as calibration of weights, flasks, pipettes, straight rules, tape measures, etc.

SUPERVISION OF BUSINESS HOLDER

Bureau of Weights and Measures supervises manufacturers, importers, repairers, and sellers of weighing and measuring instruments including or measuring service providers by issuing licenses for carrying on the business, and issuing licenses for manufacturers or repairers to verify weighing and measuring instruments which are manufactured or repaired by themselves.

CONTROL OF PACKAGED GOODS

Bureau of weights and measures is responsible for prescribing the displaying method of net content of packaged goods and inspecting the net content of packaged goods possessed under packers, importers, and sellers including making public awareness regarding the using methods of weighing and measuring instruments in goods transactions.

CONTROL OF WEIGHING AND MEASURING INSTRUMENTS

Bureau of weights and measures is responsible for verification of weighing and measuring instruments which are manufactured, repaired, and supervision of the uses of weighing and measuring instruments to ensure that no taking advantage of abuse of such instruments takes place. The Weights and Measuring inspectors will go to inspect and examine the conditions, properties, and accuracy of weighing and measuring instruments used at markets, stores, and purchasing places and make public understanding regarding a correct means on the use of weighing and measuring instruments.

CUSTODIAN OF WEIGHING AND MEASURING STANDARD

Bureau of weights and measures is responsible for keeping and maintaining of standards of legal metrology, prescribing qualification of such standards, developing calibration methods including providing calibration service for its officers, business holders and users of weighing and measuring instruments.

REGIONAL VERIFICATION CENTERS AND BRANCH OFFICES

Besides the Bureau of Weights and Measures in Nonthaburi, Department of Internal Trade has established 4 Regional Verification Centers and 22 Branch Offices. The Regional Verification Centers in each region are responsible for providing technical support, equipment, standards for and cooperation in several activities with their Branch Offices.

Directorate for standards and quality
Quality assurance and testing center 2

Bui Van Ly
Mechanical Lab.

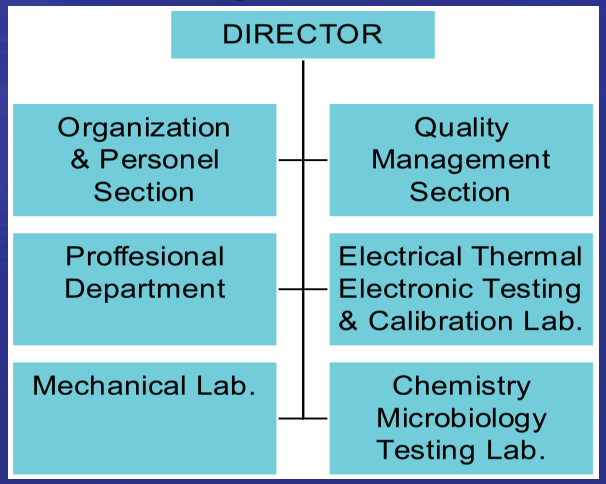
Head Office:
97 Ly Thai To Street, Da nang City, VIETNAM
Tel/Fax: (84)0511820868

Testing Lab:
02 Ngo Quyen Street, Da nang City, VIETNAM
Tel: (84)0511831049
H.P: 0905112768
E-mail: quatest2@dng.vnn.vn

organization chart

ministry of science and technology
(most)
⇓
directorate for standards and quality
(stameq)
⇓
quality assurance and testing centre 2
(quatest2)

quatest2



Company outline:

Quality Assurance & Testing Center 2 (QUATEST 2) is under the Directorate for Standards and Quality (STAMEQ), to manage activities in particular Standards - Metrology - Quality.

QUATEST 2's main tasks are

- To verify, to calibration, to adjust and to repair standards and measuring equipments in field of mass, force, pressure, volume, flow, electricity, electronic, thermal, and etc.
- To test quality (by destructive and nondestructive method) of construction materials such as : steel, metal, cement, concrete and reinforced concrete structures, stone, brick, roof plate, and etc.

QUATEST 2's main tasks are

- To test quality of food, foodstuff, agricultural products, chemicals fertilizers, pesticides, electrical, electronic and mechanical products textile and rubber products and etc.
- To test, to analyze quality properties of soil, water, air, ... concerning environment and environment protection.

QUATEST 2's main tasks are

- To train and to consult on developing the quality management system by ISO 9000, TQM, GMP, Q-Base,....; Laboratory management system by ISO/IEC 17025, environment management system by ISO 14000.
- To access products to be conformed to Vietnamese Standards (TCVN) and to access Quality management system manufacturing and/or service companies.

QUATEST 2's main tasks are

- To inspect and to control quality of export-import goods.
- To manufacture, to supply, to install, and to maintain measuring and quality testing equipments.

Metrology and Measurement Standards

- Viet Nam Metrology Institute (VMI) is the national body of Viet Nam for metrology under the Directorate for standards and quality (STAMEQ) belonging to Ministry of Science and Technology (MOST). The main functions of VMI is to maintain the national standard and to carry out scientific, technical, professional researches on metrology serving the state management on standardization, metrology and quality.

National Standards System

- TCVN (Vietnam Standards) is the registered abbreviated name of the Directorate for Standards and Quality to International Organization for Standardization (ISO). Vietnam (representing by STAMEQ) has joined ISO since 1977 and has been a member of ISO Council for the period 1997 – 1998.

National Standards System

- Among 5000 valid Vietnam Standards nearly 400 have been adopted from ISO standards including ISO 9000 and ISO 14000.TCVN participates as P-member and as O-member in functional and technical committees / sub-committees.

The role of the trade measurement inspector

- The trade measurement inspector is an important part in the metrological control of measuring instruments used for trade, and is and important contact with the general community in maintaining consumer and trader confidence in the many areas that are legally controlled by measurement.

The role of the trade measurement inspector

- One of the roles of the trade measurement inspector is ensure that the community understands the requirements of there laws and that they are effectively enforced.

Thank you